



**Response by Energia to the SEM  
Committee Consultation SEM-13-060**

*DS3 System Services*

**11 October 2013**

## **1. Introduction**

Energia is pleased to respond to the SEM Committee consultation on DS3 system services. This follows significant and technically commendable work undertaken by the transmission system operators (TSOs) to reform the system services regime which is urgently needed to, inter alia:

- Minimise curtailment
- Optimise system operation
- Efficiently utilise significant grid investment
- Maximise benefits to the consumer of supporting renewable deployment
- Facilitate Government renewable targets
- Deliver against environmental commitments at least cost to the consumer

## **2. General comments**

Energia has constructively engaged with the TSOs throughout their consultation process which began in December 2011. We have strongly supported the need for reform and the objective of implementing a new fit-for-purpose system services regime by October 2015.

We have always been clear and forthright in our feedback to the TSOs on the importance of commercial arrangements that will actually deliver the services required. We have also expressed concerns about the potential interaction between any new system services regime and the capacity mechanism and the impact of this on generation investments. With these and other commercial and policy considerations in mind we have previously called for regulatory input and consultation before concluding the process.

The current SEM Committee consultation is therefore welcome but we note with some surprise its narrow focus on the technical design of new system service products. Given the timescale that has elapsed since the TSOs submitted their Recommendation Report to the SEM Committee in April 2013 and the need to implement the new regime by October 2015 we were expecting a more advanced proposal incorporating the commercial aspects and contractual arrangements of the design.

The proposed new products and their technical design appear identical to those suggested by the TSOs and our comments and concerns in respect of them remain

unchanged. Rather than repeat them here we would ask the RAs to carefully review our response to the third TSO consultation paper which we include in Annex 1 of this response. We also consider Energia's response to CER/13/143 on ROCOF relevant.

### **3. Other feedback**

In addition to our previous comments to the TSOs (see Annex 1) and response to CER on ROCOF that should be read in conjunction with this response Energia would like to offer the following feedback:

- i. Energia strongly supports the necessary and timely delivery of system services reform as discussed further above and in Annex 1.
- ii. We have concerns that the RA timetable for implementation will not meet the October 2015 deadline. We would urge the RAs to treat the the system services workstream as a priority and we would ask that a project plan be published and adhered to for delivering the project by October 2015.
- iii. Market integration is mentioned as relevant but separate, however market integration should not delay the implementation of DS3 by 2015 as its success is critical for the efficient and timely delivery of the 2020 renewable target.
- iv. The CBA proposed should give due weight and consideration to the long run interests of the consumer, the economy and the environment that will be served by meeting renewable Targets and it should be carried out in a timely manner. The CBA should also include ROCOF and other alternative system services which could deliver increased inertia.
- v. The technical description of products cannot be considered in isolation from the proposed commercial and contractual arrangements. Thus we do not consider a phased approach to decision making in this regard particularly helpful.
- vi. A phased implementation of new services could compromise investment decisions reliant upon the provision of multiple services.
- vii. The system services will need to be introduced and the value associated with them will need to be sufficient to incentivise investment, based on Government policy and renewable energy targets.

We note that there will be an industry workshop in Dundalk on 14 October 2013 to discuss this consultation paper and the further economic analysis to be carried out. We would like to reserve the right to provide further feedback after the workshop.

## **Annex 1**



### **Response by Energia to the EirGrid and SONI DS3 Consultation**

#### ***Third System Services Consultation – Finance Arrangements***

## **1. Introduction**

Energia welcomes the opportunity to respond to this important consultation on the financial aspects of the DS3 system services review. The intention of this response is to supplement and expand upon previous submissions to the DS3 system services programme, not to overwrite them.

In this response we stress the importance of delivering enhanced system services. We then provide detailed comments on what is required to ensure delivery and confidence therein. Finally, we suggest other curtailment mitigation measures that should be progressed as a priority in addition to, and, in parallel with, the system services review.

### **Key high level messages:**

- There is a fundamental need for system services to deliver, and with confidence, for the realisation of renewable targets and associated benefits.
- The legacy link between system (ancillary) service payments and the capacity payments mechanism needs to be decoupled.
- There is currently insufficient information on proposed system services to inform investment decisions and facilitate detailed feedback<sup>1</sup>. It is therefore imperative that more clarity be provided to assess actual revenue streams and we look forward to publication of this information in due course and sufficiently in advance (to provide feedback) of a proposed decision by the SEM Committee.
- Relating to the above, a noteworthy information gap in the consultation paper is where on the electrical system sources of system services need to be connected and in what volumes. This is very important to understand from an investment perspective.
- The consultation paper leans heavily towards the modification of the existing generation fleet as the lowest cost option but it is not clear how or if this can be achieved. Realistic expectations are required regarding ease of ability to modify the existing generation fleet to provide enhanced system services.

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<sup>1</sup> We welcome the supplementary modelling information recently published by the TSOs (as a belated adjunct to the consultation paper) and the indication that further modelling information will be made available to participants in advance of any proposed decision on next steps by the SEM Committee.

- Provision of enhanced system services seems to be highly skewed towards coal and pumped storage. This needs further explanation. Furthermore the consultation paper is silent on potential system service payments to interconnectors.
- The approach adopted in the consultation paper is very theoretical where the identified benefits (and allocation of revenues) associated with each service may not necessarily match the costs. Fundamental need for delivery could mean needing to consider revenues together with costs, not independently.
- The TSOs have identified four different methods for consideration by which the proposed system services money might be allocated between the various products. Energia provides strictly qualified support for Option 3 subject to the quantum and location of required services being specified and satisfied.
- The contractual arrangements have to be financeable and tailored to deliver the necessary investment. We note that a dispatch dependent payment structure introduces significant volume uncertainty. Regular review of rates (every 3-5 years as suggested) within the contract duration introduces significant price uncertainty. Energia continues to support 10 year + contracts (with fixed rates) to ensure the necessary investments are delivered, and favours capability versus dispatch dependent payments provided that system service payments are appropriately decoupled from the capacity payments mechanism.
- Plant capable of multi-mode operation, such as a gas turbine capable of running in either open cycle or in combined cycle modes, with inherent ramping flexibility should be eligible for remuneration for said flexibility. Thus we reject the proposal in the consultation paper that ramping payments should be made purely on the basis of submitted Technical Offer Data as this would unfairly discriminate against plant with multi-mode capability when multiple operational capabilities cannot be reflected in a single set of TOD and commercial offer data (COD).
- Distribution connected generators should be eligible to participate in the system services regime – the consultation paper is silent on this.
- Addressing the RoCoF issue has been identified by the TSOs as the critical path to a higher SNSP limit (although it is not clear what the impact would be in Northern Ireland) and it is argued that the estimated benefits of enhanced system services (€295m) is predicated upon an assumption that the RoCoF issue has been resolved. However the RoCoF issue has not been resolved. The concerns expressed by thermal generators and the need for studies to determine RoCoF capabilities are valid and justified. The recent Kema report commissioned by the TSOs is welcome and informative but it does not alter the need for further funded

studies to be carried out in conjunction with Original Equipment Manufacturers (OEMs). However, we should not let the RoCoF issue distract from the need to address curtailment of wind through all possible means available and to actively progress these in parallel with the system services workstream.

We trust these and other comments as detailed further below are useful and would welcome the opportunity to discuss further with the TSOs and the RAs.

## **2. The need for enhanced system services**

As emphasised throughout this process Energia fully supports the overriding objective of the DS3 programme to proactively enhance the capability of the power system to accommodate wind and thus facilitate renewable energy targets and all the benefits that entails.

The extended SEM Committee workstream on the appropriate allocation of curtailment in tie-break situations has brought into sharp focus the underlying problem of curtailment. Energia has heavily contributed to this debate and has provided evidence to the Regulatory Authorities (RAs) illustrating its financeability implications. From our experience and modelling, we concur with the TSO assessment that with curtailment levels above 5% there is significant risk that projects will not be financeable, resulting in failure to achieve the 40% renewable target for the island of Ireland by 2020<sup>2</sup>. Our modelling has also illustrated the detrimental impact on financeability of a delay in implementing curtailment mitigation measures.

Given the existing system non-synchronous penetration limit of 50% it is inevitable that curtailment will continue to increase beyond the 5% threshold under a business as usual scenario. There is therefore an urgent need to progress a step plan implementation of mitigation measures to minimise and reduce actual and projected levels of curtailment up to and beyond 2020. The DS3 review of system services is an essential component of that. The development and delivery of enhanced system services is crucial for managing curtailment and achieving renewable targets. Confidence in delivery is fundamental for renewable investment and this requires the support and engagement of all key stakeholders, including TSOs, DSOs, generators, investors, interconnector operators / owners, and the regulatory authorities. In our

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<sup>2</sup> It is worth noting in this context that around €4.5bn of additional investment will be required in windfarm projects in order to finance the additional 3,000MW needed to reach the 2020 renewable targets. This cannot be supported by company balance sheets and will not be achieved without project financing.

response to the previous consultation covering new products and contractual arrangements we stressed the following:

*“Potential technical solutions crucially have to be commercially viable and commercially enabled to succeed. Delivery of the necessary services will require bankable and sustainable revenues. Unless these are appropriately remunerated the required services will not be achieved. It is Energia’s strong view that technical solutions cannot be progressed in isolation from financial information, details of commercial design and an understanding of all revenue stream interactions”.*

Energia thus welcomes the opportunity to contribute to this third DS3 consultation on systems services reform covering the finance arrangements. Energia is also firmly behind the Irish Wind Energy Association (IWEA) and the Electricity Association of Ireland (EAI) positions that recognise the importance of the system services review, this consultation, and the need for new system services to meet the challenges associated with the integration of non-synchronous generation. We also share some of the concerns expressed by IWEA and EAI and offer constructive feedback on what is required to ensure delivery as further detailed below.

### **3. What is required to ensure system service delivery**

#### **a) The legacy link between ancillary (system) services and the capacity payments mechanism needs to be decoupled**

Investment in flexibility will not occur without decoupling system services from the capacity payments mechanism. And required capacity will be forced to exit the market unless the existing legacy link is broken. Capacity payments are critical to ensure that plant needed for generation adequacy (in constrained on mode or when the wind is not blowing) continues to be adequately remunerated. Plant flexibility is a different characteristic albeit equally vital to support the integration of large amounts of renewables – it should be appropriately incentivised through ancillary services. These are separate and distinct mechanisms designed to incentivise flexibility and capacity adequacy respectively. Both must be allowed to work to meet these distinct objectives, the scarcity of one should not affect the value of the other. Should the existing interaction between them remain, the underlying link will undermine both mechanisms to the detriment of required capacity and flexibility.

We recognise the current interaction that exists between the BNE calculation and ancillary services but this was conceived in a very different context and was designed to deliver a level of performance consistent with the generation mix of that time. Today the mechanisms must also incentivise additional investment to deliver future flexibility to meet renewable targets. It is therefore imperative that the existing link



with the capacity mechanism be decoupled. The system services proposals advanced by the TSOs are predicated upon the existing financial link with the capacity mechanism remaining unchanged. We understand how this might be considered consistent with the RA sentiment expressed in SEM-12-035 but we submit that a broader perspective is required to appreciate the investment challenge.

The investment challenge characterised by high renewable penetration is: diminishing and uncertain market utilisation (and increased constrained on operation) for the fleet of conventional plant; declining SMP and infra-marginal rents; and a dilution of revenues from capacity payments through lower payments per MW installed. If capacity payments are further reduced through increased ancillary (or system) service deductions then capacity which is needed to support the system and back up wind generation (when the wind is not blowing) will not be economically viable and new investments in flexibility will not be financeable. It is therefore critical that the legacy link between ancillary services and capacity payments be decoupled. We also note from the TSO modelling of net benefits (valued at €295m per annum) that financing enhanced system services should be self-funding through higher wind penetration and reduced levels of constraints and curtailment (not counting the other non-quantified benefits of achieving renewable targets).

**b) Realistic expectations are required regarding ease of ability to modify the existing generation fleet to provide enhanced system services**

The consultation paper leans heavily towards the modification of the existing generation fleet as the lowest cost option but yet there appears to be no audit carried out on the ability of the existing fleet to deliver the required services. A note of caution is required if this is the assumption. We would note (i) difficulty of getting Original Equipment Manufacturers (OEMs) engaged in retrofit development to provide new services; (ii) more detail of service requirements is needed to engage with OEMs; (iii) new investment can accommodate new requirements (instead of retrofit) but this will cost more.

**c) Need for greater transparency**

Provision of enhanced system services seems to be highly skewed towards coal and pumped storage. This needs further explanation. Furthermore the consultation paper is silent on potential system service payments to interconnectors.

**d) There is a real need to understand volume and locational requirements for system services**

Where (and in what volume) on the electrical system sources of ancillary services need to be connected and remunerated is critical for investors. There seems to be

an underlying presumption of locational irrelevancy given that neither DC nor AC modelling has been performed. This is surprising to us in light of grid constraints, the changing typology of the system, wind penetration, and the move towards a decentralised operating model with a greater proportion of generation being connected to the distribution system. From an investor perspective we would like to understand where sources of system services (and in what volumes) need to be connected with reference to indicative locations, for example the Dublin area, the South West, Donegal, Northern Ireland etc. And where on the electrical system, from a system services point of view, is the greatest need for a peaker, statcoms etc? We would also encourage publication of the following information, at least on an indicative basis:

- 1) What level of reactive power is required?
- 2) Where is this reactive power required on the transmission / distribution system and geographically vis-à-vis load centres?
- 3) What is the level of ramping product required?
- 4) Is there a driver to locate generation with ramping capability on the distribution / transmission system? What are the impacts of location on voltage profiles and load flows?
- 5) Where do statcoms need to be located? We understand that with decentralisation there needs to be better control of sources of reactive power. How will this be controlled going forward?
- 6) Where is the optimum location for the connection of units which provide inertia? Will the TSOs prioritise dispatch of different sources of inertia?

**e) The contractual arrangements have to be financeable and tailored to deliver the necessary investment**

The current proposals such as dispatch dependent payments introduce significant volume uncertainty. Regular review of rates (every 3-5 years as suggested) within the contract duration introduces significant price uncertainty. The required payback will depend on the nature of the investment and how it is financed – tailoring is required. For example, modification of existing plant may be achievable with 5 year contracts but new investment will need a 10 year contract as a minimum.

The RA's have expressed concerns in the past about contracts being longer than 3-5 years. However there is no point implementing a medium term approach if that fails to deliver investments, which need to be underpinned by bankable contracts. In general, the longer the financing term, the lower the annual cost required to underpin

the investment. The real comparison should be between a 3-5 year contract at a high price level and a 10 year contract at a lower cost. Energia supports 10 year + contracts (with fixed rates) to ensure the necessary investments are delivered, and favours capability versus dispatch dependent payments provided that system service payments are appropriately decoupled from the capacity payments mechanism.

In addition, it is critical for the service provider to receive a contract from the TSO prior to committing to the investment – it will not be financeable otherwise. The TSOs should also recognise the lead time necessary to develop and/or deliver solutions.

We also support the proposal that the allocation approach would need to be fixed for at least 8-12 years. This would provide more certainty and enable investment in the additional services required, provided the remuneration is sufficient in this timeframe.

**f) The income stream must be matched to the funding needed for new investment services**

The approach adopted in the consultation paper is very theoretical where the identified benefits (and allocation of revenues) associated with each service may not necessarily match the costs. Fundamental need for delivery could mean needing to consider revenues together with costs, not independently.

**g) Ramping product requires clarification and refinement**

- In relation to the proposed ramping product we request confirmation that non-synchronised plant which can realise this service in the timeframe allowed is eligible for payment.
- Like EAI, we are strongly of the view that plant capable of multi-mode operation, such as a gas turbine capable of running in either open cycle or in combined cycle modes, with inherent ramping flexibility should be eligible for remuneration for said flexibility under this product. Along these lines we strongly reject the proposal in the consultation paper that payments should be made purely on the basis of submitted Technical Offer Data. This would unfairly discriminate against plant with multi-mode capability when multiple operational capabilities cannot be reflected in a single set of TOD and commercial offer data (COD).
- Also consistent with EAI we have concerns regarding the proposed design of the remuneration for ramping. Inherent in the design, is that a provider gets payment when ramping is available/realisable. If the TSO avails of the service, the service is no longer realisable and the payment will stop. This creates the perverse incentive on providers never to get called. Like EAI,

Energia contends that any plant constrained on, which, as a result can provide no further ramping, should continue to receive ramping payments

**h) Synchronous Inertial Response (SIR) product should be refined**

In relation to the proposed SIR product we share EAI's views and recommendations as follows:

- a. All inertia has a value and all plant capable of providing this service should be remunerated provided that the Minimum Generation threshold mandated by Grid Code is met. The proposed 15 second threshold for SIR is arbitrary and is inconsistent with this principle. Energia, like EAI, therefore calls for its removal.
- b. The "lowest sustainable MW output" needs a definition. It is imperative that due consideration is given to the value attributed to the provision of this service as it must be greater than Operational Reserve payments received at Minimum Generation in order to incentivise provision.

**i) Allocation of system services revenue**

The TSOs have identified four different methods for consideration by which the proposed system services money might be allocated between the various products, as follows: Option 1 (equal division); Option 2 (as determined by the TSOs based on operational experience); Option 3 (using a series of Plexos studies); or Option 4 (a pre-determined generation portfolio).

Energia provides strictly qualified support for Option 3 subject to the quantum and location of required services being specified and satisfied.

**j) Distribution connected generators should be eligible to participate in the system services regime – the consultation paper is silent on this.**

In our response to the previous consultation covering new products and contractual arrangements we stressed that wind and other distribution connected generators should be eligible to provide system services and that this should be progressed. We would welcome a status update on this and a proposed implementation plan from the TSOs and DSOs.

**k) Rate of Change of Frequency (RoCoF) issue needs to be addressed**

Addressing the RoCoF issue has been identified by the TSOs as the critical path to a higher SNSP limit (although it is not clear what the impact would be in Northern Ireland) and it is argued that the estimated benefits of enhanced system services (€295m) is predicated upon an assumption that the RoCoF issue has been resolved. However the RoCoF issue has not been resolved. The concerns expressed by

thermal generators and the need for studies to determine RoCoF capabilities are valid and justified. The recent Kema report commissioned by the TSOs is welcome and informative but fundamentally it does not alter the need for further funded studies to be carried out in conjunction with Original Equipment Manufacturers (OEMs). The conclusions of the Kema report are heavily qualified and caveated<sup>3</sup> and we note the following pertinent extract:

*“However, further investigation is needed to analyse the effect on wear and tear and the accompanied maintenance schedules that may need adjusting due to an increased frequency of higher RoCoF events”.*

In our response to the previous consultation covering new products and contractual arrangements we noted the importance of the RoCoF issue and how it was being tackled in two separate (but complementary) ways; (1) by exploring the possibility of all generators withstanding a higher rate of change of frequency without significant modification; and (2) by introducing new system service products to mitigate the risks – these for example include synchronous inertial response and fast post-fault active power recovery.

It is acknowledged by the TSOs that the need for and hence value allocated to the above new products is inversely related to the ability of all generators withstanding a higher RoCoF. Logically therefore if compensation and support is required to determine and enhance RoCoF capabilities this should be made available and progressed as per EAI’s suggestion as a supplementary solution under (2) above.

It is also very important to appreciate the practical difficulties of getting the necessary Original Equipment Manufacturer (OEM) engagement on the proposed RoCoF precedent given the small size of the Irish market. Alternative and supplementary means of addressing the RoCoF issue should be actively considered and progressed.

Notwithstanding the above, it is very important not let the RoCoF issue distract from the need to address curtailment of wind through all possible means available and to actively progress these in parallel with the system services workstream, as discussed further in section 4 of this response.

#### **I) Need for more information and suggested way forward**

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<sup>3</sup> For example Kema note the capability of tolerating a RoCoF of 1 Hz/s ...”without *obvious* negative effects”, stating they “do not pose an *immediate* threat”, and that ...”without *detailed investigations on each specific generation asset* it is not possible to make a final statement on the higher RoCoF compliance”.

We welcome the supplementary modelling information recently published by the TSOs (as a belated adjunct to the consultation paper) and the indication that further modelling information will be made available to participants in advance of any proposed decision by the SEM Committee. We should stress however that there is insufficient information in the consultation paper to inform investment decisions or to provide detailed feedback. The proposed regime must be financeable and must provide sufficient clarity to inform investment decisions. It is therefore imperative that more clarity is provided to assess actual revenue streams. This would include indicative rates consistent with the preferred valuation and allocation methodologies, underlying models and modelling assumptions (including product volumes for each system service), sensitivities, guidelines on the performance-scalar etc. Another noteworthy information gap in the consultation paper is where on the electrical system sources of ancillary services need to be connected, as further discussed above. We suggest this information be published as a priority and in advance of any proposed decision on next steps by the SEM Committee. This is not to delay the process but, on the contrary, to facilitate detailed analysis and more feedback necessary to inform effective design and ensure successful delivery. Along similar lines we would urge publication of any additional modeling, analysis or proposals in response to the request for further information embedded in the SEM Committee Cover Note SEM-12-117.

#### **4. Other curtailment mitigation measures to progress**

Both IWEA and EAI have suggested a number of important curtailment mitigation measures in addition to system services that should form part of the solution. These include:

- Reduced Min Gen
- Effective operation of interconnectors to export at times of high wind
- Decreasing levels of must-run generation
- Energy storage
- Sophisticated demand side management
- Smart grids and smart metering
- Electrification of heat and transport

We would stress the need for these and other curtailment mitigants to be progressed as a priority in addition to, and, in parallel with, the system services workstream.

We also share a sense of frustration expressed by IWEA at the lack of perceived progress on some mitigation measures. In this regard there is a concern interconnectors importing at times of high wind and thus increasing curtailment. Effective operation of interconnectors to export at times of high wind is crucial but there is little transparency around how this is being addressed by real time SO-SO trades or other party trades in real time. More transparency would also be welcome on progress developing enhanced system tools to accommodate wind.

In addition to the above Energia would suggest that serious (TSO, DSO, policy or regulatory) consideration should be given to the following:

- Enabling and incentivising the provision of system services from distribution connected generators.
- Understanding and implementing what needs to be done through system services to further incentive and reduce Min Gen levels of the conventional generation fleet below Grid Code or Minimum Function Specification standards<sup>4</sup> - the proposed system services offer little to address this in our view and the incentive to reduce Min Gen for a more advantageous market position is ineffective for units constrained on (increasingly the case with high wind).
- Ending the priority dispatch status of peat which (apart from being economically and environmentally perverse) invariably imposes an additional constraint on system operation, thus removing a degree of freedom to optimise system operation in real time in minimising curtailment.
- Creating a support hub (of technical, departmental and regulatory composition) to assist and advise private enterprise wishing to develop commercially viable innovative solutions to reduce curtailment of wind<sup>5</sup>.

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<sup>4</sup> Some units of the same manufacturer (and similar design) are declared at significantly different Min Gen levels, which would indicate there is scope for further reduction.

<sup>5</sup> The aim of this suggested initiative would be to develop and support smart solutions which could be rolled out quickly, ideally sooner than might be possible using conventional smart technologies (such as smart grids, smart meters, and energy storage) which tend to be considered part of the post 2020 solution.