

**IESA Response to  
Future Arrangements High Level Design**



The Irish Energy Storage Association welcomes the consultation by EirGrid on Shaping our Electricity Future. We welcome the opportunity to input into a crucial aspect of Ireland meeting its 2030 and 2050 renewable electricity targets.

**Key Points**

A firm, detailed and realistic program for the design and implementation of the new arrangements is needed to give certainty to the industry. Intuitively, in the absence of such a program, April 2024 appears unrealistic as a Go-Live date.

The consultation document does not cover how the transition from the current arrangements to the future arrangements will be carried out.

The other uncertainty is the detail of the future arrangements. This high level design paper is useful but lacks sufficient detail about the procurement processes to be able to assess the implications for investment signals. In addition the implications for service providers will only become clear when a slightly more detailed design is agreed. It is not really possible to assess the high level design options without an intermediate level of design. We suggest that an extra stage be added to the consultation process which provides sufficient detail to the high level design options to be able to make an informed decision on which option is best. We appreciate that this would add additional time to the process but we are concerned that a high level design option will be selected and problems will emerge when the next level of design is carried out as, only then, will the implications emerge. This really only applies to the procurement processes as explained below. All of the other issues are more straightforward.

We support the concept of having a range of procurement processes. It is difficult to comment further in the absence of further detail on what processes are envisaged and for what services. Sect 5.6 and Fig 2 give some indication of your thinking but a lot more detail is required. It would be useful to have a table with all the applications and services listed and the range of procurement processes envisaged for each. The overall proposal must be coherent such that plants which provide a range of services have a clear procurement process to support investment. Multiple procurement processes at different times covering different services may not allow plant to enter contracts which would support investment. This is not covered in the consultation document but is fundamental as part of the high level design. Procurement processes for plant which only provide one or two services are also required.

The consultation document does not cover who takes responsibility for some critical risks. For example the requirements for system services may be less than envisaged if the TSO does not achieve 95% SNSP capability or has to maintain a minimum number of conventional units on load at min gen or has to have specific conventional units on load because of transmission constraints. Such risks should be taken by the TSO, not the service provider as only the TSO can manage these risks.

Some DS3 plants have been built on Uncapped contracts on the expectation (without a definitive guarantee) that the tariff regime would continue for 2-3 years after 2023. The proposed daily auctions for each individual product introduces significant revenue uncertainty in comparison to the tariff regime. This is particularly acute for ½ hour batteries, designed to provide FFR to TOR but it also applies to longer duration batteries. (Weekly or monthly auctions would not provide any additional revenue certainty compared to daily auctions.) An overarching payment mechanism is required to ensure sufficient revenue certainty (subject to availability and performance) to ensure investment. This could be a floor revenue (which could, if necessary, be balanced by profits above an agreed cap being shared between investors and consumers). The difference between the floor revenue and the market revenues (subject to availability and performance) could be funded by the PSO in the same way that renewable generation is supported by RESS. There could be an auction for contracts for long duration storage (like RESS) which would provide competitive pressures and ensure best value for the consumer. We would like to make it clear that we do not oppose a competitive day-ahead market but we would caution against an overall market arrangement which does not provide sufficient revenue certainty to attract new investment. The economic signals and operational incentives of a day-ahead market would still work in the context of an overarching mechanism such as a floor. Significant additional energy storage, particularly longer duration storage, will be needed by 2030. Projects take many years to develop, so investment signals now are important.

There is also a fundamental problem for Energy Storage plants providing FFR to TOR (which EirGrid specifically encouraged under the Volume Capped contracts). It is quite likely that providers would clear some products but not others e.g. they may clear FFR and TOR1&2 but not the ones in between. In practice they would provide POR and SOR but not receive any revenue for these products. There needs to be an opportunity to bid a sensible bundle of services such as FFR to TOR1/2. At the same time, there will need to be an opportunity for plant which cannot provide, say, FFR but can provide the other reserves, to bid.

The system services market design should be considered in relation to a wider electricity market design review. A holistic view of the CRM, the DS3 and the energy markets need to be considered to encourage investment. Revising a single pillar of the market in isolation cannot deliver investment in storage. Wind and solar generation have contracts (historical, RESS, PPAs) to provide sufficient revenue certainty to support new investment. Additional energy storage to provide system services and also short, medium and long duration backup will also need some mechanisms to provide sufficient revenue certainty to support new investment.

We welcome the recognition that the methodology for arriving at the derating factors for energy storage, based on storage duration, need to be reviewed. However the fundamental structure of the CRM should also be reviewed as it was designed to provide security of supply for a system based largely on fossil plant. The negative difference payments are a problem for energy storage and standby plant as the market price can exceed the strike price without some of these plants running. Plants are incentivised to limit their bids to the strike price to mitigate the above risk but this price may be insufficient for standby plant to recover their costs over a small number of running hours. We suggest that capacity payments be linked to emissions to incentivise low emissions and to reflect the additional value in terms of Ireland meeting its emissions targets. We acknowledge that there is already an emissions signal in the energy market, through the carbon price, but standby plant will have very low running and thereby receive very little benefit from this. The CO<sub>2</sub> limit for participation in the CRM is a mechanism designed for thermal units, not low carbon technologies needed by the system for 2030. There should be an incentive to reduce the CO<sub>2</sub> further, below the current limit for participation. An incentive mechanism to invest in low/zero carbon dispatchable

generation is required. We recognise that any capacity remuneration mechanism is complex so a review needs to ensure that whatever is put in place works for all types of plants required into the future.

Longer duration storage, say 6 hours<sup>1</sup>, would be very valuable to the grid but is not financially viable without changes to the market. Long term contracts could be part of the answer, to incentivize investment.

There is a strong argument that system services which maintain grid stability are fundamentally different to energy and some flexibility around EU competitive procurement rules should be provided. There is some discussion in the EU at the moment about which services are included as Balancing Services and which are excluded from it. Moreover decarbonisation targets should take precedence and justify some flexibility around EU procurement rules.

The high level design should include a proposal for a market mechanism to alleviate grid congestion, for which energy storage would be very suitable. There is only an oblique reference to this but no proposal, even at a high level. Projects that alleviate system operational issues should be rewarded for the service provided in maximising the use of the existing grid infrastructure.

	Question	IESA Response
1	Do stakeholders consider that the commitment to putting these arrangement in place on an enduring basis, at least to 2030, represents sufficient certainty of process?	A firm, detailed and realistic program for the design and implementation of the new arrangements is needed to give certainty to the industry. Intuitively, in the absence of such a program, April 2024 appears unrealistic as a Go-Live date. The other uncertainty is the detail of the future arrangements. This high level design paper is useful but lacks sufficient detail about the procurement processes to be able to assess the implications for investment signals. In addition, the implications for service providers will only become clear when a slightly more detailed design is agreed. It is not really possible to assess the high level design options without an intermediate level of design. We suggest that a extra stage be added to the consultation process which provides sufficient detail to the high level design options to be able to make an informed decision on which option is best. We appreciate that this would add additional time to the process but we are concerned that a high level design option will be selected but problems will emerge when the next level of design is carried out as, only then, will the implications emerge. This really only applies to the procurement processes. All of the other issues are more straightforward.
2	What are stakeholders views on the options and recommendations presented for qualification/registration? Are there further options	We agree with the “Rolling Application Process”. Otherwise there is a waste of a resource to the grid, if plant is just sitting there, not operational, and there is a loss of revenue to the provider. This financial uncertainty eventually increases the cost to the end consumer. A maximum process time, as proposed, is important although

<sup>1</sup> A study by AFRY for IESA “The Missing Link – The value of energy storage in the All-Island market” concluded that 6 hour storage provided the best bang for buck to the grid

	that may be considered?	90 days looks excessive.
3	What are stakeholders views on the proposed formalisation of the QTP?	The proposals are reasonable although further clarification on the mechanism is required. Further clarity on new technologies such as LAES would be welcomed.
4	What are stakeholders views in terms of the introduction of a single System Services Code?	We agree with a single System Services Code. As part of a wider issue, there should also be a separate grid code section for non-synchronous energy storage plant which, currently, is lumped in under Power Park Modules which was written for wind generation. The writing of a grid code for energy storage needs a different mindset to that of wind generation.
5	What are stakeholders views on the options in terms of governance of rules changes?	We agree with option 2, System Services Code Panel.
6	Do stakeholders have views on the potential to amalgamate different Panel meetings?	We think that this should initially be a separate panel for a period of, say, 2-3 years. At that stage it will be clear whether it could be amalgamated into another panel such as the T&SC panel.
7	What are stakeholders views on the funding arrangement proposals?	We do not have a strong view on the funding arrangement.  However, an observation we would make is that system services costs do not follow demand in the same way in which energy costs increase with increased demand. Is it possible that adding system services costs to energy costs on a trading period basis may actually provide perverse economic signals to suppliers and demand management at certain times? We suggest that further investigations would be worthwhile into the extent to which the customer demand profile and TSO dispatch decisions actually drive system services costs. The lack of hedge contracts may also be a problem for suppliers
8	What level of involvement should the DSO/DNO have in the governance process?	The DSO/DNO should be part of the System Services Code Panel. In practice we envisage that detailed technical issues of system services being provided by Distribution level plants would be worked out between the DSO and TSO
9	How should the interactions with distribution connected parties be governed?	We favour option 3 (TSO Led) but with rules discussed in the System Services Code Panel and common principles applied. We favour Option 3 for the following reasons: <ul style="list-style-type: none"> <li>• Most system services are for the TSO with a small number such as reactive power being for both the TSO and the DSO. The contract should be with the TSO (option 3) rather than the DSO (option 2)</li> <li>• System services being provided to the TSO by Distribution connected parties have implications for the DSO which need to be taken into account. It appears to us that it is better for the TSO and DSO to discuss the implications of the services being proposed by a particular new plant</li> </ul>

		<p>between themselves rather than the Provider having separate discussions with the TSO and the DSO as proposed under option 1. The Provider is not an expert in these technical implications and should not become stuck in potential technical disagreements between the TSO and the DSO which have to be resolved between them.</p>
10	Are there any further considerations for the High Level Design of the Governance Arrangements?	<p>Guidelines on what can be connected and what services can be provided at the Distribution level should be published. This would give Providers a good idea of what might be possible even though local network conditions may impinge in specific circumstances.</p>
11	What are stakeholders views on the Auction Design options and SEMC Recommendation?	<p>The introduction of daily bidding introduces significant financial risk to plant built primarily for the provision of system services. This could well lead to stranded BESS plant or no new plant being built because funders will regard the revenue streams as being too uncertain.</p> <p>There is also a fundamental problem for Energy Storage plants providing FFR to TOR (which EirGrid specifically encouraged under the Volume Capped contracts). It is quite likely that providers would clear some products but not others e.g. they may clear FFR and TOR1&amp;2 but not the ones in between. In practice they would provide POR and SOR but not receive any revenue for these products. There needs to be an opportunity to bid a sensible bundle of services such as FFR to TOR1/2. At the same time, there will need to be an opportunity for plant which cannot provide, say, FFR but can provide the other reserves, to bid.</p> <p>It is not clear whether a single PQ pair or multiple PQ pairs are envisaged for each product.</p> <p>How is a PN envisaged for system services products like POR, SSRP. Will plants provide a PN MW as well as an Available MW for each product?</p>
12	Are there any further considerations in terms of the Auction Design options?	See answer to Q17
13	What information is required to get a full view of the volumes requirements for System Services?	<p>It would be useful if the TSO could produce a paper explaining the drivers for each of the system services and how they are inter-related i.e. how the requirements can be met in a number of different ways with different mixes of system services. If such a paper provided, even indicative, volumes required for different services, it would help the industry to know where future opportunities lay to provide what the grid actually needs.</p> <p>Annual updates, as proposed in the consultation document, would be useful.</p>
14	What are stakeholders views on the development of Secondary Trading of System Services?	<p>Secondary trading would mitigate risks for all players and probably lead to a more efficient market outcome. The benefits would have to outweigh the cost of implementing and operating secondary trading but it should certainly be</p>

		considered.
15	What are stakeholders views on the proposals regarding Commitment Obligations and	The proposal seems reasonable.
16	Do Stakeholders have views on the introduction of the concept of Firm Access to the System Services market?	<p>The concept of Firm Access should apply to the System Services market in the same way as the energy market. Some providers have Firm Access and are held whole for energy so they should also be held whole for system services.</p> <p>There needs to be an incentive for EirGrid to provide as firm an access as possible, as early as possible. The rules around paying providers with Firm Access if they are constrained off is a disincentive for EirGrid to deem a connection firm.</p> <p>Nevertheless, the concept of non-firm access makes sense as it allows connections to be made in advance of deep reinforcements being carried out. Furthermore there needs to be an incentive for providers to locate in locations where a strong connection can be given. In addition, a locational element for the relevant system services e.g. voltage control, inertia and fault current would be useful in minimising constraints and ensuring a robust grid.</p>
17	Do stakeholders have views on layered procurement of System Services? What approach could be taken to support this?	<p>We support the concept of having a range of procurement processes. It is difficult to comment further in the absence of further detail on what processes are envisaged and for what services. Sect 5.6 and Fig 2 give some indication of your thinking but a lot more detail is required. It would be useful to have a table with all the applications and services listed and the range of procurement processes envisaged for each. The overall proposal must be coherent such that plants which provide a range of services have a clear procurement process to support investment. Multiple procurement processes at different times covering different services may not allow plant to enter contracts which would support investment. This is not covered in the consultation document but is fundamental as part of the high level design.</p> <p>The consultation document does not cover who takes responsibility for some critical risks. For example the requirements for system services may be less than envisaged if the TSO does not achieve 95% SNSP capability or has to maintain a minimum number of conventional units on load at min gen or has to have specific conventional units on load because of transmission constraints. Such risks should be taken by the TSO, not the service provider, as only the TSO can manage these risks.</p> <p>There is a strong argument that system services which maintain grid stability are fundamentally different to energy and some flexibility around EU competitive procurement</p>

		<p>rules should be provided. There is some discussion in the EU at the moment about which services are included as Balancing Services and which are excluded from it. Moreover decarbonisation targets should take precedence and justify some flexibility around EU procurement rules.</p> <p>Some DS3 plants have been built on Uncapped contracts on the expectation (without a definitive guarantee) that the tariff regime would continue for 2-3 years after 2023. The proposed daily auctions for each individual product introduces significant revenue uncertainty in comparison to the tariff regime. This is particularly acute for ½ hour batteries, designed to provide FFR to TOR but it also applies to longer duration batteries. (Weekly or monthly auctions would not provide any additional revenue certainty compared to daily auctions.) An overarching payment mechanism is required to ensure sufficient revenue certainty (subject to availability and performance) to ensure investment. We would like to make it clear that we do not oppose a competitive market but we would caution against a market which does not provide sufficient revenue certainty to attract new investment. Significant additional energy storage, particularly longer duration storage, will be needed by 2030. Projects take many years to develop, so investment signals now are important.</p> <p>Longer duration storage, say 6 hours, would be very valuable to the grid but are not financially viable without changes to the market. Long term contracts could be part of the answer.</p> <p>Figure 2 in Section 5.6 opens the door to bilateral contract for products with reduced levels of competition. ISEM should be transparent on the metrics used for assessing the advantages of procuring services/products through bilateral contracts and also publish the contracts online. Although the use of bilateral contracts is fine in principle we would expect that bilateral contracts with existing plants to be limited to one year length and for new build up to six years in length. Also bilateral contracts should be limited to carbon free assets otherwise the net zero target will never be achieved.</p>
18	Are there any further considerations in terms of Market Design?	<p>The system services market design should be considered in relation to a wider electricity market design review. Wind and solar generation have contracts (historical, RESS, PPAs) to provide sufficient revenue certainty to support new investment. Additional energy storage to provide system services and also short, medium and long duration backup will also need some mechanisms to provide sufficient revenue certainty to support new investment.</p> <p>There is no incentive for flexible demand which can increase its demand as well as reduce it (e.g. using thermal or other</p>

	<p>energy storage) and thereby reduce curtailment and/or network congestion. Locational scalars should be considered in relation to this. TuoS and DuoS should also be reviewed with a separate UoS for such flexible demand.</p> <p>Locational scalars should also be considered, to reflect the ability of a unit to address locational technical network constraints such as Inertia, Short Circuit Level, Reactive power, etc.</p> <p>System services markets in GB and other countries may also offer solutions. For example the currently flexibility markets in the UK offer contracts that are more bankable than proposed future DS3 arrangements due to the longevity of the contracts available.</p> <p>We welcome the recognition that the methodology for arriving at the derating factors for energy storage, based on storage duration, need to be reviewed. However the fundamental structure of the CRM should also be reviewed as it was designed to provide security of supply for a system based largely on fossil plant. The negative difference payments are a problem for energy storage and standby plant as the market price can exceed the strike price without some of these plants running. Plants are incentivised to limit their bids to the strike price to mitigate the above risk but this price may be insufficient for standby plant to recover their costs over a small number of running hours. We suggest that capacity payments be linked to emissions to incentivise low emissions and to reflect the additional value in terms of Ireland meeting its emissions targets. We acknowledge that there is already an emissions signal in the energy market, through the carbon price, but standby plant will have very low running and thereby receive very little benefit from this. We recognise that any capacity remuneration mechanism is complex so a review needs to ensure that whatever is put in place works for all types of plants required into the future.</p> <p>The high level design should include a proposal for a market mechanism to alleviate grid congestion, for which energy storage would be very suitable. There is only an oblique reference to this but no proposal, even at a high level. <i>“It is further noted that the proposed High Level Design has several elements, including the locational scalar and layered procurement, that should assist the TSOs in developing market solutions to constraints until the necessary network reinforcements had been made.”</i></p>
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