ESB NETWORKS

# Demand Flexibility Product Proposal

## Recommendations on responses received to consultation document
## ESB Networks

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# 1 Executive Summary

Ireland faces significant climate change challenges, including increased temperatures, more intense storms, and rising sea levels[1]. The country, through the Climate Action Plan, is working to electrify heat and transport, with ambitious targets for electric vehicles and heat pumps by 2030. Additionally, it's crucial to provide additional electrical capacity to meet ambitious housing targets and support the continued expansion of the economy while decarbonising the electricity system through connecting renewables. The National Energy Demand Strategy (NEDS) outlines steps for development and implementation of demand flexibility and long-term strategic planning to enhance cost, security, and sustainability benefits. The Irish policy framework for storage supports the integration of electricity storage to enhance grid stability and renewable energy use. To effectively manage the increasing load on the distribution network, a comprehensive suite of new tools is essential.

Through the Distribution Management and Systems Operations (DMSO), ESB Networks is engaging customers to provide demand responses from all sectors. Initiatives such as "Is This A Good Time" offering for domestic customers and "Beat the Peak Business" for commercial/industrial customers, along with various other programmes, have been developed to encourage flexibility. Additionally, our Flexibility Multi-Year Plan (2025-2029)[2] outlines strategic milestones and initiatives aimed at enhancing demand response and flexibility across the network.

The Demand Flexibility Product (DFP) has been developed with the purpose of congestion management on the distribution network. This is the primary purpose of this product. The locations that we have published for the procurement of this product were selected on the basis of having an enduring distribution congestion need. As a secondary benefit, the product will also assist in delivering government policy objectives and Climate Action Plan Targets

The initial consultation, published on 20th December 2023, provided an overview of the guiding principles of the product, proposals for high-level product characteristics and the associated procurement approach. This consultation was open for a period of eight weeks, closing 14 February 2024 following a public webinar with stakeholders on 8th February 2024. Thirty-two consultation responses were received.

On 10th May 2024, ESB Networks submitted a Recommendations Paper to the Commission for Regulation of Utilities (CRU) summarising the responses and providing recommendations to CRU on the product characteristics. On 12th July 2024, the CRU published their decision on this Recommendation Paper approving the DSOs procurement

[1] https://www.epa.ie/environment-and-you/climate-change/what-impact-will-climate-change-have-for-ireland/
[2] https://esbnetworksprdsastd01.blob.core.windows.net/media/docs/default-source/publications/flexibility-multi-year-plan-2025-2029_web-accessible.pdf?sfvrsn=20b9870d_3

proposal and noting a separate consultation was to be developed that would contain further details on the Demand Flexibility Product (DFP).

In October 2024, ESB Networks published a second consultation on the DFP, seeking stakeholders' views on specific arrangements of the product. This consultation was open for a six-week period, closing 9th December 2024 following a public webinar with stakeholders on 26th November 2024. Fifteen consultation responses were received.

This paper represents ESB Networks' submission to the Commission for Regulation of Utilities (CRU) summarising the responses and providing recommendations to the CRU on specific arrangements. It is structured as follows:

- Section 2 provides an introduction.
- Section 3 provides an overview of the respondent organisations.
- Section 4 provides an overview of ESB Networks' recommendations based on the consultation responses.
- Section 5 provides a detailed thematic breakdown of the key consultation questions, the responses received and ESB Networks' response and recommendation.

The recommendations set out in this paper relate to the market operations and revenue streams ('a day in the life', the incentives regime (pre- and post-energisation), details on the sharing factor, contract termination, proposal for tendering of locations, early energisation, the off-ramp clause, and the procurement's phasing.

Subject to the CRU's decision on ESB Networks recommendations, ESB Networks will be publishing a Call for Tender (CfT)[3] reflecting these recommendations in Q2 2025.

[3] Known as Request for Tender (RfT) in previous consultations.

# 2 Introduction

The decarbonisation of Irish society relies on fundamental changes to how energy is generated and consumed. Given the scale and pace of change needed to enable this transformation at the right pace and the right cost, every Irish home, farm, community, and business will play a part.

The Demand Flexibility Product has been developed with the purpose of congestion management on the distribution network. This is the primary purpose of this product. As a secondary benefit, the product will also assist in delivering government policy objectives and Climate Action Plan Targets.

The Climate Action Plan 2023 (CAP23) established an interim target of 15-20% demand side flexibility by 2025, building on the existing target of 20-30% by 2030. This target was retained in the Climate Action Plan 2024 (CAP24). The introduction of this target reflected the need for a renewed, accelerated, concerted effort by all stakeholders to increase demand flexibility on the electricity network and meet the level of emissions reduction required by the carbon budget programme and sectoral ceilings for the electricity sector. This policy puts a more immediate spotlight on the role of a flexible system in supporting renewables integration and electricity demand management. In line with the Climate Action Plan, the Electricity Storage Policy Framework for Ireland paper which was published in 2024 references the need for "improving the overall operation of the electricity network through the provision of targeted demand flexibility". The paper details a policy framework which presents 10 government actions to support the role of electricity storage systems in Ireland's energy transition. One of the policy actions referenced in the paper is to "Support the immediate procurement of Demand Flexibility Products and of (long duration) electricity storage to meet specific network needs, in the distribution and transmission systems respectively".

In July 2024, the CRU published their National Energy Demand Strategy Decision Paper (CRU202467). The National Energy Demand Strategy Biannual Update was subsequently published in February 2025 (CRU202505). The objectives of the strategy are as follows:

- Set out measures to ensure that overall electricity and gas demand is consistent with Ireland's carbon sectoral emissions ceilings.
- Deliver demand flexibility, particularly non-fossil fuel flexibility, and demand response initiatives, as outlined in CAP23 and CAP24,
- Support the delivery of Ireland's transition to reach net-zero by 2050.

The introduction of these policies as well as the DSO licence conditions has resulted in the development of a Demand Flexibility Product by ESB Networks. In this document, we outline specific provisions for the Demand Flexibility Product and further detail on the associated characteristics to be procured in locations where there is a defined system need, as part of an overall programme to meet the capacity requirements summarised in ESB

Network's "Electricity Distribution Network Capacity Pathways" report[4]. The specific medium-term product being procured is for demand reduction, demand shifting or an injection of power, at or near their full contracted service capacity, for a specified duration of hours in a day and across a 15-year contract. The product has been designed to meet the specific network need arising at this time and while doing so will also contribute to the delivery of the CAP23 and CAP24 2025 and 2030 targets.

This procurement commenced in Q4' 2024 with the publication of the QSQ for the Demand Flexibility Product on the eTenders platform. Subject to CRU approval, a Call for Tender is due to be published in Q2 2025. It is anticipated that approximately 109 MW would be sourced in the first procurement batch, and this will inform subsequent procurement batches with a view to have up to 500 MW of Demand Flexibility Product contracted across the distribution system by 2030.

Future volumes of demand flexibility may address different technical characteristics (e.g. smaller size, location, reliability, voltage, frequency and duration of delivery, months/years confidence of service delivery). These additional locations may also be more focused on consuming excess renewable energy (in effect demand up) than addressing congestion due to high demand or may be smaller in scale, addressing congestion at lower voltages of the electricity network, or directly connected with new demand connections. In some locations where a smaller scale demand flexibility product is required, the viability of stacking will be considered and may not be required.

In addition to the products currently available for providers to contract to provide demand flexibility (for example "Beat the Peak Business"[5] and other competitions as announced on ESB Networks website and e-tenders on a rolling basis), a range of products are in development and will be issued for participation from a range of different flexibility providers, offering different technical solutions to different technical needs. For more detail, please refer to ESB Networks Flexibility Multiyear Plan which was published in January 2025.[6]

[4] https://www.esbnetworks.ie/docs/default-source/publications/electricity-distribution-network-capacity-pathways-consultation-report---accessible-version.pdf
[5] https://www.esbnetworks.ie/services/manage-my-energy-use/beat-the-peak-programme/beat-the-peak-business
[6] ESB Networks – Flexibility Multi Year Plan 2025-2029

# 3 Response to the consultation

The consultation on the Demand Flexibility Product closed on 4 December 2024. In total, 15 responses were received by the CRU from the following companies:

- ABO Winds Ireland Ltd
- Bord Gáis Energy
- Demand Response Association of Ireland (DRAI)
- Electricity Association of Ireland (EAI)
- EirGrid
- Energia
- ESB Customer Solutions
- ESB Generation and Trading
- Energy Storage Ireland (ESI)
- Flex Power Solutions
- Hanwha Energy
- Irish Energy Storage Association (IESA)
- Ireland Electrified
- NHOA Energy
- SSE

An additional 3 responses were received via the CRU portal:

- Alpha House
- EDF Renewables
- EP UK Investments

# 4 Overview of ESB Networks' recommendations

The following table provides an overview of the key proposals set out in the second consultation paper, and outlines where the recommendations set out in this paper have changed from the consultation proposals due to stakeholder feedback.

### Table 1: ESB Networks' recommendations

| Topic | Consultation Proposal | Recommendations |
|---|---|---|
| A Day in The Life | Flexibility Service Providers (FSP) can participate in other markets and stack revenues subject to satisfying their operating envelope.<br><br>ESB Networks will issue operating envelopes to the FSP at least 24 hours ahead of day-ahead market closure.<br><br>The operating envelope will not change unless there are unforeseen circumstances, and damages will not apply if an asset cannot deliver as a result of not being provided sufficient notice. | FSPs maintain the responsibility of staying within operating envelope limits and subject to the conditions mentioned in this paper.<br><br>**Clarification:** The FSP will need to demonstrate that they will be able to obtain a market position to be run in the merit order, enabling them to meet their operating envelope obligations.<br><br>**Addition:** ESBN expect to cover Capacity Market charges and imbalance charges that are incurred by the FSP under certain circumstances that are detailed in this paper. |
| Incentive Regime (Pre-Energisation | ESB Networks will retain the right to terminate contracts if critical milestones are delayed to the extent that delivery timescales will be missed, or if Minimum Completion is not met after the long-stop energisation date.<br><br>Minimum Completion refers to the energisation of at least 50% of contracted capacity, or at least 5 MW for each site. Delay damages in €/MW will apply if the FSP does not meet its energisation date with the full contracted capacity. | **Change:** The number of critical milestones has been reduced to 10 to align with progress reporting in other markets.<br><br>**Clarification:** Minimum Completion refers to the energisation of the lesser of the following: 50% of the contracted capacity or 5 MW per site |

| Topic | Consultation Proposal | Recommendations |
|---|---|---|
| Performance Incentives (Post-Energisation) | There will be a performance-based incentive regime delivered through adjustments to FSPs' monthly availability payment through a demand-weighting factor and performance scalar.<br><br>The Demand Weighting Factor adjusts the monthly availability payment in line with the foreseen utilisation of the FSA per month. The performance scalar adjusts the availability payment in line with the average half hourly performance of the FSA over the course of the month.<br><br>The Performance scalar is calculated using a sliding scale with a reduction factor equal to 5% for every 1% reduction in monthly performance. In addition to the performance scalar, the sharing factor will be set to 100% if the FSP deviates from the operating envelope for any period of time. | **Change:** The performance scalar shall be calibrated with a gradient of 4% reduction in monthly availability payment for every 1% reduction between 100% and 75% performance.<br><br>**Addition:** To mitigate financial risk to FSPs, ESB Networks shall introduce an initial grace period in the DFP contract which temporarily waives the financial consequences of the performance scalar for the first 2 months of operation.<br><br>**Clarification:** The Demand Weighting Factor will be set on an annual basis. |

| Topic | Consultation Proposal | Recommendations |
|---|---|---|
| Sharing Factor Technoeconomic Analysis | ESB Networks proposed a sharing factor range of **70-80%** applied to net revenues (rather than gross revenues) earned in other markets.<br><br>For settlement, FSPs would have needed to provide evidence of their trading balance sheets each month in existing energy markets so that ESB Networks can ensure that the correct amount of revenue is recovered. | **Change:** ESB Networks is recommending a reduced sharing factor of **50%** on net revenues.<br><br>**Clarification:** Net revenues to which the sharing factor is applied are now defined as gross merchant revenues (across wholesale, balancing and capacity markets) less eligible variable costs including fuel costs such as for example the cost of charging for a battery storage asset as well as other fuel costs, imbalance charges and Capacity Market penalties in certain circumstances). Eligible fuel costs will include charging costs and fuel costs for other technologies. It is proposed that there will will be a cap methodology in respect of fuel costs and the methodology will be set out in the CfT documentation. The objective of applying a cap methodology is to seek to ensure that the DUoS customer is not subsidising excessive fuel costs. Careful consideration will need to be given to the cap methodology and the implementation.<br><br>**Addition:** Only imbalance charges incurred as a direct result of an ESB Networks action, such as a “stop instruction”, will be covered as an eligible variable cost.<br>**Addition:** In relation to Capacity Market charges, the FSP must make every effort to meet the Capacity Market obligation in order for this to be considered an eligible variable cost.<br><br>**Clarification:** The sharing factor will be applied to positive net revenues earned over a monthly period. |

| Topic | Consultation Proposal | Recommendations |
|---|---|---|
| Contract Termination | Termination damages will increase progressively as the energisation date approaches. The damages value range will be around €24,000/MW - €60,000/MW. A conditional bond will be posted up front as part of contract award, based on 100% of the termination damages. The conditional bond will only be held until the point of energisation.<br><br>Where a successful contract is terminated, the FSA must apply for a modified connection agreement.<br><br>A flat damages rate would apply for any termination post-energisation, set at the rate of €60,000/MW. | No changes to Proposal being recommended. |
| Proposal for tendering of locations | DFP procurement will adopt locational batching of tenders. All locations that would benefit from the DFP shall be included in the opening procurement batch (with a full list to be issued at CfT).<br><br>Locations not selected in a given procurement round could be included in future batches as well as locations that were previously selected but which still have a flexibility need. | No changes to Proposal being recommended. |
| Early Energisation | Energisation before the 32-month energisation date shall be optional. Eligibility for early energisation will be assessed on a case-by-case basis based on network need during the tender process.<br><br>Delay damages would not apply ahead of the 32-month energisation date. | **Clarification:** Where early energisation is granted, FSPs will be able to earn revenues from the full floor and share mechanism for longer than 15 years. |
| Off-Ramp Clause | An off-ramp clause will be included to allow for the contract to be terminated by mutual agreement. | No changes to Proposal being recommended. |
| Phased Procurement of capacity over time | Phased approach to the delivery of capacity in which the developer is paid for installed capacity in increments as the network need increases over time up until the availability payment matches total installed capacity. | **Removal:** No phasing of delivered capacity over time. This has now been removed, for at least the  in the case of the first as a result of industry feedback. |

# 5 Detailed consultation responses and recommendations

## 5.1 A day in the life

### *5.1.1 ESB Networks' proposal*

In our consultation paper, we proposed the following:

**ESB Networks' consultation proposal**

- Flexibility Service Providers (FSP) can participate in other markets and stack revenues subject to satisfying their operating envelope. ESB Networks illustrated three scenarios which varied in the amount of capacity available for an FSP to participate in other markets.
- An operating envelope is the upper and lower MW limits for export and/or import within which a FSA may be safely operated while maintaining distribution system security and therefore the range within which a FSA may by utilised in other market arrangements. If the asset operates outside of these limits, they will be subject to damages. These limits can be different for each FSA for each Period.

  ESB Networks will issue operating envelopes to the FSP at least 24 hours ahead of Day-Ahead Market closure. The operating envelope will not change unless there are unforeseen circumstances, and damages will not apply if an asset cannot deliver as a result of not being provided sufficient notice.
- A TSO-DSO Operating Model is under development by ESB Networks and EirGrid. As part of these arrangements, the TSO will be aware of FSPs' operating envelopes and will dispatch assets in a manner that respects those limits. Where the TSO dispatches an asset outside of the limits, FSPs will not be subject to damages.

### *5.1.2 Summary of consultation responses*

The consultation asked respondents the following questions, with the responses received summarised below:

**Question 1**

- Do you think that the market timings described in the scenarios above allow an FSP to participate in the Demand Flexibility Product (DFP) and also stack revenues in other markets?

Five respondents considered that the timings relating to the receipt of the operating envelope and ex ante market timings allow an FSP to participate in the DFP and also stack revenues in other markets. One respondent welcomed the proposal that assets will not be

at risk of damages from ESB Networks as a result of TSO actions for operating an asset outside of the limits of their operating envelope.

Two respondents suggested that further details and examples would help to identify any unforeseen issues and to understand how revenues can be stacked while meeting the obligations of the DFP.

One respondent raised the concern that the financial consequences of an operating envelope are not known until the Day-Ahead Market closure and therefore units may be required to trade contrary to market signals which could result in a loss.

### Question 2

- Do you see any barriers to doing so?

Twelve respondents felt that further clarity is required on market interactions and revenue stacking. Respondents felt a greater understanding of the holistic market design is required in order to understand market signals for investment and the interaction of obligations across different markets. One respondent requested transparency on the expenses deductible in net revenue-sharing calculations. One respondent noted concerns related to unbundling rules.

Three respondents highlighted that the participation of storage assets in wholesale electricity markets is currently restricted as these units are currently not able to submit negative Physical Notifications (PNs). Respondents expressed concern that if this is not resolved this would limit the ability of storage assets to engage in revenue stacking effectively through the DFP.

One respondent requested clarity that assets will have firm access within the operational limits set by ESB Networks as this is critical to allow assets to stack revenues due to Balancing Market risk. The respondent also noted that if a 'firm connection' is not available then FSPs may not be able to be at the correct state of charge to deliver the service when required.

Five respondents stated that, under a 70% to 80% sharing factor, FSPs take 100% of the risks in participating in other markets and only retain 20% to 30% of upside positive revenue. Within this context, several respondents also expressed concern with being obligated to trade within an operating envelope which enforces a financial loss on FSPs and noted that the maximum reserve price should account for these losses.[7]

[7] Discussion of both of these issues is provided in Section 5.4 within the context of the definition of net revenues applied to the sharing factor.

## Question 3

- Do you have any concerns with the current proposal for revenue stacking and market participation?

Ten respondents requested more clarity on the expected shape of FSPs operating envelopes to understand the likely revenue stacking opportunities and the extent to which the operating envelope may enforce loss-making trading positions. One respondent requested clarity on the methodology that ESB Networks will follow for setting operating envelopes.

Six respondents highlighted that there was uncertainty over asset cycling rates for storage assets participating in the DFP. Respondents stated that developers need to know how many cycles assets will be obliged to run to understand operational demand and degradation costs. Several respondents stated that a failure to provide the necessary certainty on asset cycling will result in additional risk premia being priced into tender bids. One respondent argued that flexibility in the operating envelope should be allowed for to account for degradation (and therefore performance characteristics) of the Flexible Service Asset (FSA) across the duration of the contract.

Seven respondents considered that the TSO-DSO Operating Model is unclear and greater clarity is required on this. Several respondents requested more information relating to the scheduling and dispatch of assets and how FSPs can participate across multiple markets. Respondents stated that clarity on the TSO-DSO Operating Model is needed prior to the Call for Tender (CfT) to allow FSPs to reflect revenue stacking risks in their tender bids.

With regards to interactions with the Capacity Market, one respondent requested clarity on whether FSPs would be eligible for 10-year Capacity Market contracts. Another respondent suggested DFP winners should be awarded Capacity Market contracts given that tender bids submitted into one procurement arrangement will be dependent on the procurement outcome in the other.

One respondent stated that any changes to other market arrangements to accommodate market stacking with the DFP must be considered by Regulatory Authorities (RAs) and potentially the Single Electricity Market (SEM) Committee. One respondent noted the requirement to examine barriers to existing SEM arrangements and rules around unbundling.

Three respondents questioned the appropriateness of the floor and share mechanism. Respondents stated that the investment signals from revenue stacking are not clear enough to build a sound business case and suggested that a system services style contract would provide greater revenue certainty for developers and operational certainty for System

Operators. Three respondents welcomed further analysis regarding the economic efficiency of the proposals.[8]

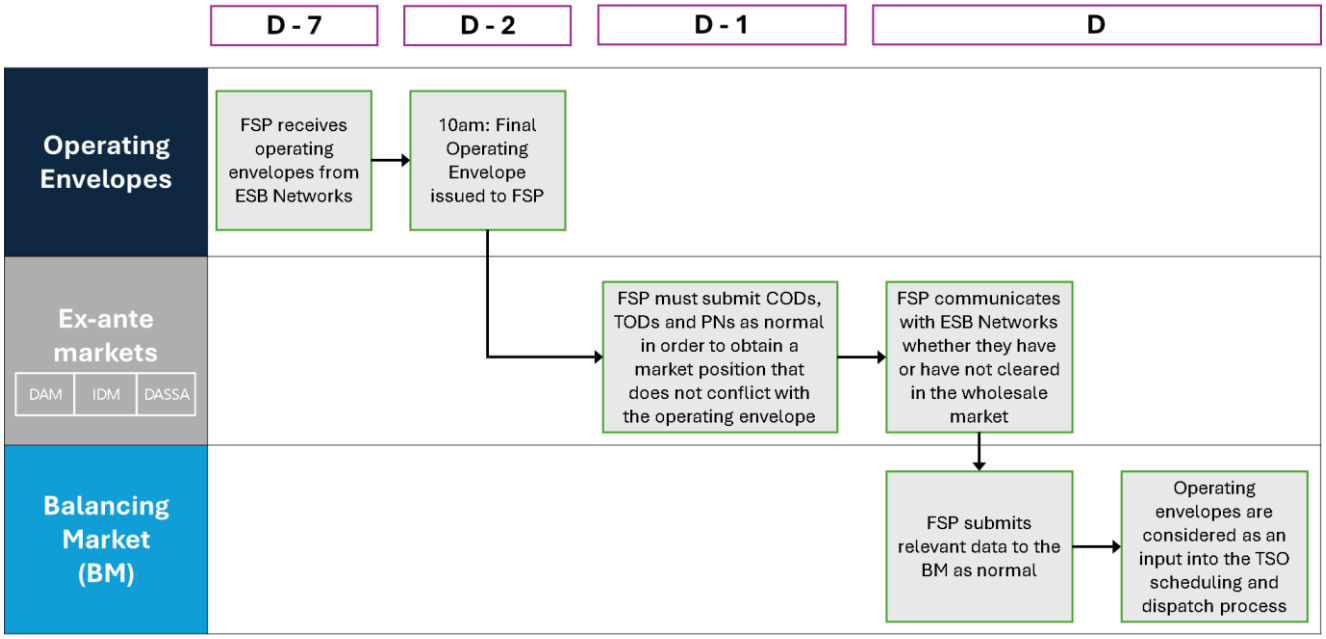
### *5.1.3 ESB Networks' response*

ESB Networks welcomes respondents' feedback in relation to the day in the life section which is considered in the four sub-sections below relating to market interactions, operating envelopes and the TSO-DSO Operating Model, respectively.

#### Market interactions

ESB Networks notes respondents' broad support for the proposed market timings and acknowledges the need for further information on the interactions between the DFP and other markets. Figure 1 below sets out a high-level overview of how the DFP will interact with other markets arrangements.

**Figure 1: Market sequencing and interactions**




The DFP will interact with market arrangements as follows:

- At least 7 days ahead, ESB Networks will issue an indicative operating envelope schedule to give the FSP advanced notice of their likely requirement for the DFP.
- At least 24 hours before the Day-Ahead Market gate closure FSPs will receive their final operating envelope.

[8] Discussion of these issues is provided in Section 5.4.

- FSPs can stack revenues by submitting bids and offers in the Day-Ahead Market (DAM), the Intra-Day markets (IDMs) and the future Day-Ahead System Services Auction (DASSA). FSPs are responsible for submitting offers and obtaining a market position (including clearing in the merit order) across these markets in a way that does not conflict with the limits of the operating envelope issued by ESB Networks. FSPs will be scheduled and dispatched by EirGrid to follow Physical Notifications (PNs) per the usual process.

- FSPs will submit relevant data to the Balancing Market (BM). EirGrid will be notified of the operating envelopes as an input into the scheduling and dispatch process.

- FSPs should be able to stack revenues by participating in the Capacity Market. FSPs will be expected to stay within operating envelope limits. If there is a conflict, by which the limits in the operating envelope forces an FSP to forego a Capacity Market obligation, then ESB Networks may cover these charges as part of the Net Revenues calculation. FSPs are obligated to try to meet the Capacity Market obligations to the best of their ability, which includes attempting secondary trading.

In order to assess whether FSPs meet their obligations under the operating envelope, data including but not limited to metering data may be used.

Several respondents raised the issue of the need for negative Physical Notifications (PNs) to be facilitated. We understand that the ability for storage units to be able to submit negative PNs and to be dispatched to charge is to be implemented as part of Tranche 1 of EirGrid's Scheduling and Dispatch programme which is due to go-live in May 2025.[9] This will allow for the improved participation of storage assets in the SEM and address concerns about broader market participation raised by several respondents.

As noted by respondents, a further facilitator of market stacking is the extent to which an FSPs' connection may be interrupted to manage limitations on the network (i.e., 'flexible' access). FSPs are expected to follow the operating envelope and ESB Networks will only issue a stop instruction (to be defined at CfT stage) if there is a risk to the distribution network.

We discuss the interaction of flexible access with other markets arrangements in turn below:

- ESB Networks acknowledges that flexible access may increase the risk to an FSP in meeting its obligations in the ex-ante markets and the Capacity Market. In these circumstances, FSP's are entitled to recover the cost of any imbalance charges

[9] https://cms.eirgrid.ie/sites/default/files/publications/EirGrid-FPM-Industry-Workshop-January-2025.pdf, https://cms.eirgrid.ie/sites/default/files/publications/19-Oct-2023-Proposed-Changes-for-Battery-Storage-Units-Mods-Committee.pdf,

through market *earnings* before the sharing factor is applied (i.e., through the definition of 'net revenue' which is shared with DUoS customer)[10].

- ESB Networks expect the FSP to manage their Flexible Service Assets so that they can meet their commitments. In the event that clear circumstances are presented that due to instructions by the TSO or DSO that commitments cannot be met, ESB Networks would not apply the performance scalar to FSPs.

ESB Networks notes respondents' request for clarity over what market costs are deductible in calculating net revenues to be shared with the DUoS customer. These comments have been addressed in Section 5.1.

### Operating envelopes

ESB Networks acknowledges that more clarity is needed over DFP operating envelopes and utilisation requirements for potential FSPs to assess market stacking opportunities as part of their tender bids.

Firstly, ESB Networks confirms that operating envelopes will be set in the least restrictive way to satisfy distribution system needs for congestion management. This will be the result of a purely technical evaluation of potential network congestion and the set of operating restrictions which can solve these constraints. This assessment will be restricted to the needs of the distribution network and is not expected to be informed by broader system or market factors. The sharing factor creates an incentive for ESB Networks to set operating envelopes that align to the network need whilst restricting the FSP as little as possible to enable revenue stacking.

The precise profile of the operating envelopes cannot be fixed ahead of the CfT for the duration of a DFP contract. However, ESB Networks will provide its best estimate on the forecast operating envelopes over time for each location at the CfT stage. To illustrate, for the purposes of this recommendations paper, Annex 1 shows a range of expected operating envelopes forecast for 2028 and 2035 at a randomly selected location based on ESB Networks estimate of the expected network needs for those periods. For each year, ESB Networks shows the most restrictive day of the year and, within that same month, the least restrictive day. This aims to illustrate the expected spread of operating envelopes during a time of the year in which DFP will be most active.

In addition to the indicative operating envelopes showing the forecast envelope for each period over the 15 years, ESB Networks is also able to provide indicative frequency of FSA utilisation. While the DFP is open to all technology types, indicative cycling statistics for BESS have been provided in response to industry feedback. The indicative frequency of FSA utilisation in Annex 2 corresponds to a randomly selected location from ESB Network's

[10] See further discussion in 5.1

list of procurement locations. This analysis shows that, based on projected network needs at this location, a 23MW battery would be expected to cycle an average of 0.3 times per day in 2028 when delivering to its operating envelope for ESB Networks, However, in order to maximise revenues from wholesale markets it is acknowledged that the FSP may cycle the asset at a higher rate.

ESB Networks acknowledges respondents' concerns regarding the possibility of 'enforced losses' in ex ante wholesale and balancing markets in order to satisfy the operating envelope under the DFP. In principle, this could be the case where, for example, a BESS is required to charge at high prices in ex ante markets in order to provide flexibility in a later period with lower prices. In practice, however, this is highly unlikely for an FSP since:

1. FSP's eligible fuel costs will first be recovered by FSPs through their wholesale earnings *before* the sharing factor is applied (i.e., through the definition of 'net revenues' to be shared with the DUoS customer),[11] and:

2. ESB Networks modelling indicates that the required running profile of the FSA broadly aligns with market signals (e.g., charging during periods of lower prices (i.e. when renewable generation is high and/or demand is low) and discharging during periods of higher prices (i.e. during peak demand or low RES periods).[12]

### Behind the meter assets

ESB Networks will facilitate behind the meter assets as long as they can meet the technical requirements which form part of the Cft.

### TSO-DSO Operating Model

ESB Networks acknowledges respondents' concerns regarding the TSO-DSO Operating Model. The Operating Model is subject to an ongoing detailed design process and ESB Networks wishes to reassure FSPs that this framework will allow for the stacking of revenues and rules will be established that ensure that FSPs will not face penalties under the DFP if TSO actions results in deviations to the operating envelope.

In relation to wholesale market bidding, no changes to existing processes are being proposed under the DFP. The DFP will need to clear in the merit order. Operating envelopes will be shared with the TSO ahead of time in order to be considered in the existing scheduling and dispatch process to allow for conflict resolution ahead of delivery.

[11] See Section 5.1
[12] Modelling of a selected location with conservative trading assumptions shows that a BESS could operate at a wholesale market loss in only 2 weeks of the year by complying with its operating envelope (see Annex 5).

### 5.1.4 ESB Networks' recommendation

**ESB Networks Recommendation**

- Operating envelopes will be issued to FSPs at least 24 hours in advance of the Day-Ahead Market closure and will reflect the maximum import or export available to the FSA across a 24-hour period.
- In the rare circumstances where there is an expected conflict between an FSP's DFP operating envelope and Capacity Market obligations, ESB Networks expects to be able to deduct the associated Capacity Market charges as part of the calculation of net revenues to which the sharing factor applies. FSPs are obligated to try to meet the Capacity Market obligations to the best of their ability including through secondary trading arrangements.
- ESB Networks will set operating envelopes based only on the technical needs of the network.
- ESB Networks reassures FSPs that the TSO-DSO Operating Model will allow revenue stacking and avoid penalties due to TSO actions. No changes to wholesale market bidding processes are proposed. The DFP will need to clear in the merit order. Operating envelopes will be shared with the TSO for conflict resolution before delivery.
- Given that the technical needs of the distribution network themselves are not fixed over time, ESB Networks is not able to commit to fixed operating envelopes or frequency of asset utilisation for FSA's over the course of a 15-year contract. However, at this stage, ESB Networks has provided an indicative view of the forecast requirements at a select location and will publish forecast requirements for all locations at CfT stage for the full 15 years.

## 5.2 Incentive Regime: Pre-Energisation

### *5.2.1 ESB Networks' proposal*

In our consultation paper, we proposed the following:

**ESB Networks' Consultation Proposal**

- ESB Networks' guiding principles in setting pre-energisation damages are that they should incentivise timely delivery, encourage early energisation where needed, ensure FSPs do not benefit from delay or non-delivery, and reflect costs to the network. To inform this position, ESBN considered existing and comparable markets such as the Capacity Market in the SEM and in Great Britain.
- To inform this position, ESB Networks considered existing and comparable markets such as the Capacity Market in the SEM and in Great Britain.
- FSPs must follow an energisation delivery schedule of 32 months after contracting and are required to submit detailed risk registers, project plans and periodic progress reports.
- ESB Networks will retain the right to terminate contracts if critical milestones are delayed to the extent that delivery timescales will be missed, or if Minimum Completion is not met after the long-stop energisation date. Minimum Completion means the energisation of at least 50% of contracted capacity, or at least 5 MW for each site.
- Delay damages in €/MW will apply if the FSP does not meet its energisation date with the full contracted capacity. Delay damages will increase as delays continue and these will be capped at a percentage of the termination damages. Minimum Completion and Full Completion will be considered and these will inform delay damages.
- The duration of the contract will not be extended due to an energisation delay, unless this is caused by circumstances outside of control of the successful FSP.
- Where Minimum Completion is met by the energisation date, but Full Completion is not, ESB Networks may consider revising the contracted capacity and damages will be applied to the undelivered capacity.

### *5.2.2 Summary of consultation responses*

The consultation asked respondents the following questions, with the responses received summarised below:

**Question 4**

- Do you agree with our guiding principles? Do you think that we are missing any principles or considerations?

Four respondents broadly agreed with ESB Networks' proposed guiding principles for the incentive regime. Several respondents supported the use of comparable arrangements such as the Capacity Market in Ireland and the UK to inform ESB Networks' thinking on guiding principles for the incentive regime.

Seven respondents noted that delay damages should not be triggered by events outside of developers' control. Some respondents highlighted how this is done in the Capacity Market.

One respondent expressed concern that there is currently a lack of accountability measures on ESB Networks which has the flexibility to meet changes in its short-term needs, whereas developers face uncertainty and challenging timelines which increases risk for developers. Another respondent stated that risks should lie with the party best placed to manage this risk.

One respondent stated that the principles lack sufficient detail to fully evaluate.

### Question 5

- Do you agree that the proposed mitigation measures are reasonable and proportionate to encourage timely delivery of FSA and flexibility services?

Five respondents expressed concern that the number of milestones will divert resources away from timely delivery.

Several respondents commented on the 32-month delivery period. One suggested that this timeline was sufficient, another recommended reducing it, and two respondents proposed extending it.

Two respondents requested clarity on the process for providing and evaluating feedback and the resolution of disagreements or appeals. One respondent suggested an independent audit of progress and risk management would be beneficial.

### Question 6

- In your view, are there any other critical milestones FSPs should provide progress reports on?

Some respondents suggested additional critical milestones that FSPs should provide progress reports on. These included reporting on planning permission progress, equipment procurement and on-site arrival of equipment.

### Question 7

- In your view, what is a reasonable period to provide progress reports?

Several respondents suggested that the reporting intervals could be reduced to reduce the burden placed on FSPs, for example in line with reporting intervals in the Capacity Market or with the Low Carbon Inertia Services (LCIS).

Three respondents suggested periods to provide progress reports ranging from monthly during certain phases up to 6 monthly reporting.

### Question 8

- Do you agree with the proposed structure of delay damages?

Four respondents broadly agreed with the proposed structure of delay damages.

Five respondents requested clarity on the delay damages framework in the contract, for example in relation to definitions, justifications for delays and what would be deemed outside on their control. Several respondents also highlighted the importance of exceptions due to delays outside of a developer's control.

One respondent considered that the delay damages are substantial and may discourage participation and another suggested the long-stop date should be extended.

A number of respondents noted that the right for ESB Networks to terminate contracts is punitive and should only be done in extreme circumstances.

### Question 9

- In your view, are there any other critical milestones ESB Networks should consider to inform delay damages and/or termination damages?

Respondents suggested a number of considerations including relief for grid connection, permitting and procurement milestones.

### Question 10

- Do you have any views regarding the proposed MW value for Minimum Completion?

Six respondents broadly agreed with the proposed MW value for Minimum Completion. However, two respondents stated that this value prevents assets below 5MW from being considered completed, requested further rationale behind this value and questioned the export and import capacity requirements under the DFP.

Four respondents suggested that the design should account for partial delivery or substantial completion at 90% of awarded capacity, as is done in the Capacity Market.

### *5.2.3 ESB Networks' response*

Responses to these questions can be grouped into guiding principles, milestones and reporting, and delay damages. These are considered in turn below.

Guiding Principles

As part of the development of the incentive regime, ESB Networks undertook a thorough review of precedent in the Capacity Market in Ireland and the UK, and proposed measures that are consistent with these mechanisms to the extent possible taking into account the unique considerations of the distribution network and the DFP. This review informed the development of the guiding principles and the incentive regime more broadly.

ESB Networks notes respondents' feedback regarding delays to energisation outside of a FSPs control. ESB Networks would like to reaffirm that delays caused by events beyond FSPs reasonable control will be exempt from delay damages and will be considered as an extension to the long-stop date, as is the case in the Capacity Market. Examples of delays outside of FSPs control include delays in processing a grid connection application by the System Operator. Delays caused by external risks which FSPs are best placed to manage, such as supply chain disruption, will not be exempt from delay damages as this provides an appropriate incentive for FSPs to deliver projects in the required timeframe.

One respondent expressed concern that there is a lack of accountability on ESB Networks. ESB Networks interprets this as a general concern with the distribution of construction risk between itself and FSPs. As discussed further below, ESB Networks is committed to absorbing external risk for FSPs where this arises due to actions taken by ESB Networks or due to a force majeure event. ESB Networks also reminds respondents of the overall context of support package which offers FSPs a significant investment risk share with the DUoS customer through the 'floor and share' structure.

### Milestones and reporting

ESB Networks notes respondents' concerns relating to the burden placed on FSPs due to reporting requirements and the mixed feedback in relation to the delivery schedule of 32 months. Reporting requirements aim to identify delays at the earliest possible opportunity and to ensure delivery risks can be managed to avoid the need for contract termination. To limit the reporting burden placed on FSPs, ESB Networks recommends reducing the number of critical milestones to a total of ten milestones which will align with those used in other markets including the Capacity Market. ESB Networks will confirm the critical milestones FSPs are required to report on at the CfT stage. Reporting will be required at intervals of approximately 6 months, as is required in the Capacity Market.

These milestones are as follows:

1. Substantial Financial Completion
2. Commencement of Construction Works
3. Completion of Designs
4. Completion of Civil works
5. Equipment ordered – Factory Acceptance Test complete
6. Equipment installed – All site sign off sheets complete

7. Substantial Completion
8. Safety File available and accepted by the Company
9. Commissioning Completed

Each Implementation Progress Report shall include:

1. Details of any Milestones achieved.
2. Details of progress against outstanding Milestones.
3. Identified or potential delays in achieving outstanding Milestones; and,
4. Actions being taken to mitigate any delays.

ESB Networks reaffirms that delays caused by events beyond FSPs' reasonable control in relation to delays by ESB Networks in connecting the FSA to the network will result in the extension of the 32-month delivery schedule and will not result in delay and termination damages.

### Delay Damages

ESB Networks notes respondents support for the structure of delay damages and also the concerns relating to events outside of a developer's control (considered in the Guiding Principles section, above). In response to requests for clarity on the application of delay damages, ESB Networks wishes to reaffirm that scaled delay damages are applicable from the energisation date, whereby the energisation date is no later than 32 months after contracting. The recommended delay damages values are as proposed in the consultation and are set out in Annex 3 below.

ESB Networks recognises respondents' concerns regarding the punitive nature of contract termination where milestones are missed. The incentive regime is designed to manage risks and to ensure termination only happens as a last resort. However, where energisation will not be possible, ESB Networks considers that the right to terminate a contract is necessary and appropriate. Further recommendations in relation to contract termination are set out in Section 5.5.

ESB Networks acknowledges the broad support for the Minimum Completion value of at least 5MW or at least 50% of contracted capacity available for service delivery. ESB Networks also notes respondents' feedback in favour of allowing for substantial completion as is done in the Capacity Market. ESB Networks recommends allowing for Minimum Completion as proposed in consultation paper, whereby FSPs that achieve the Minimum Completion value will be allowed to continue with their completed capacity. They will however face damages for the undelivered capacity above this amount. ESB Networks does not recommend providing for a substantial completion value. The reasoning here is that if an asset underdelivers versus what they had contracted for, this may result in ESB Networks rejecting other bids under the belief that capacity was not needed at a particular location.

Regarding respondents' concerns relating to the impact the 5MW value would have on providers below this capacity being considered completed, ESB Networks' will define the

Minimum Completion to be the lesser of either 5 MW or 50% of the required capacity at the location, whichever is lower. This is the minimum technical requirement to assist in addressing network congestion.

### *5.2.4 ESB Networks' recommendation*

**ESB Networks Recommendation**

- FSPs must follow an energisation delivery schedule of 32 months after contracting and are required to submit detailed risk registers, project plans and periodic progress reports. The number of critical milestones and reporting stages will be reduced to align with progress reporting in other markets.
- Delays due to issuing of connection offers or force majeure, outside a FSP's control will be exempt from delay damages.
- ESB Networks will retain the right to terminate contracts if critical milestones are delayed to the extent that delivery timescales will be missed, or if Minimum Completion is not met after the long-stop energisation date. Minimum Completion means the energisation of at least 50% of contracted capacity, or at least 5 MW for each site, whichever is lower.
- Where Minimum Completion is met by the energisation date, ESB Networks will issue a revision to the contract for the completed capacity, but the FSP will face damages for the undelivered capacity until full capacity is in place.
- Delay damages in €/MW will apply if the FSP does not meet its energisation date with its full contracted capacity. The recommended delay damage structure is set out in Annex 6.33 below. Minimum Competition and Full Completion will be considered, and these will inform delay damages.
- The duration of the contract will not be extended due to an energisation delay unless this is caused by circumstances outside of control of the successful of the FSP. Where Minimum Completion is met by the energisation date, but Full Completion is not, ESB Networks may consider revising the contracted capacity.

## 5.3 Incentive Regime: Post-Energisation

### *5.3.1 ESB Networks' proposal*

In our consultation paper, we proposed the following:

**ESB Networks' consultation proposal**

- There will be a performance-based incentive regime to ensure the reliable delivery of flexibility services according to the operating envelope issued by ESB Networks. This performance incentive will be delivered through adjustments to FSPs' monthly availability payment through a demand-weighting factor and performance scalar.
- The Demand Weighting Factor adjusts the monthly availability payment in line with the foreseen utilisation of the FSA per month. The Demand Weighting Factor may be updated yearly and shared with FSPs in advance of the relevant year.
- The performance scalar adjusts the availability payment in line with the average half hourly performance of the FSA over the course of the month. Performance will be evaluated by checking measured power is within the operating envelope for all DFP events[13] where the operating envelope lower and upper limits are above the maximum export capacity and/or below the maximum import capacity of the FSA respectively.[14]
- The performance scalar is structured as follows:
    - Monthly performance between 100% - 80% → Performance scalar is calculated using a sliding scale with a reduction factor equal to 5% for every 1% reduction in monthly performance.
    - Monthly performance ≤ 80% → Performance scalar = 0%
- In addition to the performance scalar, the sharing factor will be set to 100% if the FSP deviates from the operating envelope during the time periods of deviation.
- Damages will not apply when non-delivery is due to exceptional circumstances outside the control of the successful tender (e.g., due to distribution system outages), maintenance with sufficient notice agreed by ESB Networks or when following DSO-TSO communications.

[13] An event is defined as 1 or more consecutive half hourly periods where the operating envelope lower and upper limits are above the maximum export capacity and/or below the maximum import capacity of the FSA respectively.
[14] The detailed set of formulae prescribing how monthly performance will be assessed is shown in Section 6.2.2.1 of the second consultation document.

### 5.3.2 Summary of consultation responses

The consultation asked respondents the following questions, with the responses received summarised below:

#### Question 11

- Do you consider that the use of a Demand Weighting Factor can ensure proper flexibility service delivery incentives?

Three respondents broadly supported the use of a Demand Weighting Factor to provide appropriate incentives.

However, three respondents questioned why this was needed as this creates significant revenue volatility on floor payments and as it is not used in other markets, may have unintended consequences. It was suggested that the performance scalar should provide sufficient incentives to be available without the need for the Demand Weighting Factor.

#### Question 12

- What are your views on the proposed principle in calculating the Demand Weighting Factor?

One respondent stated that they supported the proposals for calculating the Demand Weighting Factor .

Three respondents requested further clarity on the calculation and stated that this should be published ahead of the CfT.

Two respondents suggested that the Demand Weighting Factor should be set at the CfT stage for the duration of the 15-year contract as developers cannot evaluate the risk of subsequent reviews on revenues.

#### Question 13

- Do you agree with the proposed performance scalar methodology?

Two respondents expressed broad support for the proposed scalar methodology.

Eight respondents were unsupportive of the methodology, stating that the approach is highly punitive for an immature market. Some respondents also suggested that a tolerance should be applied to take account of metering errors. Five respondents also noted that the reduction of the performance scalar for availability of below 80% removes the incentive to be available if this threshold has already been met.

Five respondents noted the importance of clarity in how the methodology is applied, with one respondent requesting this specifically in relation to long duration batteries. A number

of respondents also requested transparency in the modelling work and assumptions underlying the performance scalar methodology.

To ensure fairness, one respondent suggested the methodology should be reviewed periodically, with another suggesting that transparency would be enhanced through an independent audit process. One respondent also noted that frequent cycling impacts assets' lifespans and therefore flexibility should be allowed for in the contract as performance characteristics change.

### Question 14

- Are there alternatives to ensuring proper flexibility service delivery incentives that ESB Networks should consider?

Two respondents suggested that rewarding exceptional performance should be considered as an addition to the proposed methodology.

One respondent suggested that equating the loss availability to the performance scalar is a reasonable approach that provides incentives to perform without being disproportionately punitive.

One respondent stated that simpler contracts would result in better value for money as the current proposals are too complicated and will therefore result in increased prices or a lack of interest.

### Question 15

- Do you agree with the proposed additional measures?

Two respondents acknowledged the need for additional measures given the requirement to be available to provide flexibility.

Three respondents said that the circumstances under which the additional measures apply should be clear.

Three respondents disagreed with setting the sharing factor to 100% where the FSP deviates from the operating envelope. One respondent stated that monitoring and arbitration should be the responsibility of the Regulatory Authorities.

### Question 16

- Do you agree with the proposed exceptions?

Three respondents broadly agreed with the exceptions.

Four respondents highlighted that it should be clear how exceptions are applied, for example in what cases will maintenance not apply and what is an adequate notice period

for planned maintenance. One respondent suggested that exceptions should account for uncontrollable events and should also result in full availability payments.

One respondent expressed concern regarding unintended consequences if the list of exceptions is not exhaustive.

**Question 17**

- Do you agree with the proposed flexibility service delivery incentive scheme?

Three respondents stated that they agree with the principle of linking payments to performance, as is done in other schemes such as DS3 to incentivise delivery and provide value for the consumer.

One respondent expressed concern that the current floor price, specified in euros per megawatt per year (€/MW/yr), does not provide sufficient incentive for longer duration storage. Additionally, it was suggested that the megawatt-hours (MWh) should be specified prior to the tender process.

### *5.3.3 ESB Networks' response*

Responses to these questions can be grouped into overall performance incentive package, the Demand Weighting Factor, the performance scalar and additional measures. These are considered in turn below.

#### The overall performance incentive package

As set out in the consultation, the incentive package consists of two components: a measure (i.e., DWF), to further reward availability during the most important times of the year and secondly a measure to incentivise performance at half-hourly intervals. Together, these should drive the right behaviours to deliver the core objective of the DFP, i.e., to relieve congestion on the distribution network. ESB Networks considers that these measures provide clear and transparent operational signals to FSPs without introducing undue complexity which could dilute the signals' strength. ESB Networks notes that some respondents questioned whether both measures were needed and whether the overall package introduced too much complexity.

ESB Networks considers that *both* a seasonal and daily incentive are needed. If there was no demand-weighting factor, FSPs would not have a sufficient incentive to schedule asset maintenance during periods of lower system need. ESB Networks notes that wholesale market price signals alone would not be sufficient to align FSP and DUoS customer incentives, given the high cost to the DUoS customer from losing DFP capacity when its most needed (e.g. during the winter period).

Secondly, these incentives simply signal the efficient operating profile of an FSA from a congestion management perspective. ESB Networks expects, at a minimum, that FSPs are

able to plan the times of the day to meet their imports and export limit requirements at half hourly intervals. ESB Networks does not consider that these basic requirements create undue complexity for FSPs given that this is fundamental to the service which the FSP is being contracted to deliver.

### The Demand Weighting Factor

ESB Networks will publish a transparent methodology for updating this schedule over time at CfT stage. However, ESB Networks does not agree that the DWF schedule should be fixed for a 15-year period.

Overall, the DWF is expected to be strongly correlated with the annual load profile on the local distribution network. In particular, based on current load distribution forecasts, ESB Networks expects that any changes to the DWF schedule is unlikely to change the priority ranking of particular months in a year nor materially amplify the cyclical swings (i.e., maximum within-year variation between peak and trough). ESB Networks therefore does not consider that the incremental FSPs certainty achieved by fixing DWF schedules for 15-years would outweigh the inefficiency this would introduce to FSA operating signals.

### The performance scalar and additional measures

Failure to deliver against the operating envelope schedule creates a system security risk for the distribution network and therefore will impact the DUoS customer. The performance scalar has been designed to allocate this risk to the party best placed to manage it: the FSP. Whilst almost all respondents agree with this overall principle, some have concerns that the proposed calibration of the scalar is unduly punitive. ESB Networks does not consider there is an objective basis for this. In particular, whilst the cost of poor performance to the FSP (via the performance scalar) is informed by the cost this has on the system, in practice the performance scalar does not pass on all of this cost to FSPs. In this regard, the performance scalar is not unduly punitive on the FSP.

However, given the relative immaturity of this market, ESB Networks had decided to reduce the gradient of the performance scalar such that a marginal unit of underperformance carries a lower reduction in availability payment. In particular, for monthly performance between 100% and 75% the performance scalar shall be calculated using a sliding scale with an availability payment reduction factor equal to 4% for every 1% reduction in monthly performance.[15] ESB Networks still expects an extremely reliable service delivery here as is necessary with any congestion management service. Consistent unreliable performance may result in termination.

[15] This represents a change from the consultation position, which stated that for monthly performance between 100% and 80% the performance scalar shall be calculated using a sliding scale with an availability payment reduction factor equal to 5% for every 1%.

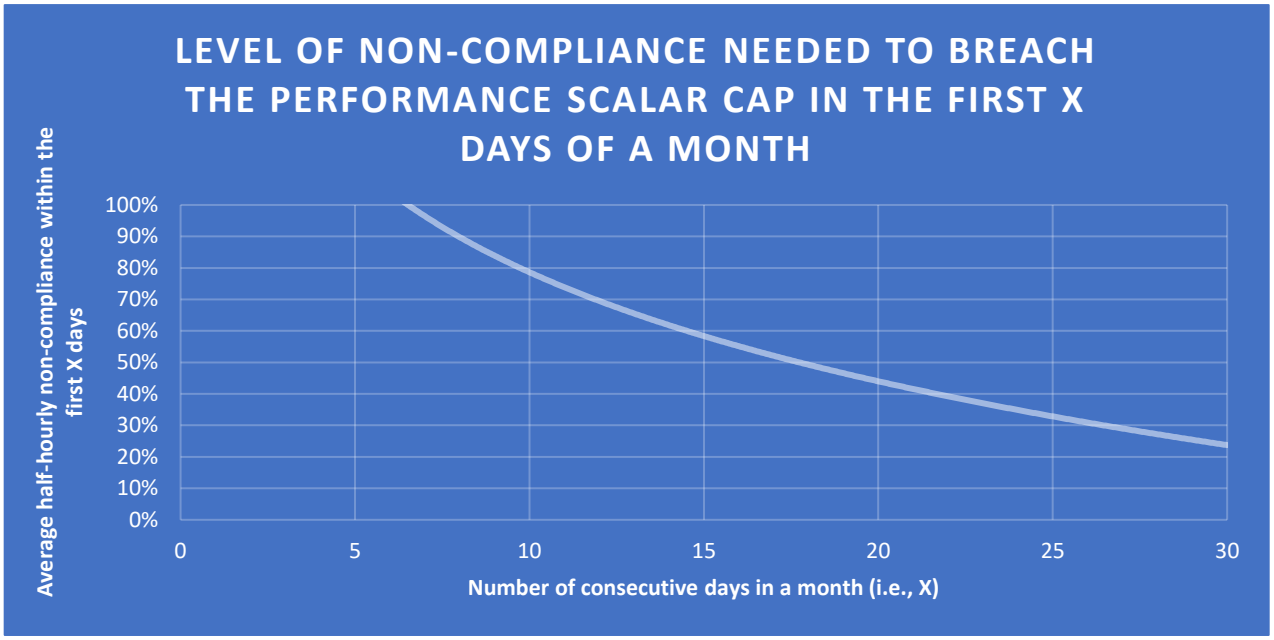
Additionally, ESB Networks appreciates that there will be a degree of learning-by-doing in the early periods of an FSP's contract during which operational performance may be more variable and the financial consequences to FSPs are more uncertain. ESB Networks considers that it may be reasonable to allow an initial grace period in the DFP contract which temporarily waives the financial consequences of the performance scalar. ESB Networks expects to set a grace period of 2 months where the performance scalar shall not apply.

With regards to the enduring calibration of the performance scalar, ESB Networks remains of the view that FSPs should receive no availability payments if they fall below the 75% performance threshold at any point in the assessment period. ESB Networks considers the strength of this deterrent effect is necessary given the consequences that passing below this performance threshold would have on the distribution network. Note: At its core, it is forecast that the constraint on the distribution network, which creates a very narrow operational window, is expected to be less than 15% of the time within the worst month.

ESB Networks acknowledges that this approach may remove the incentive for FSPs to continue to deliver its operating envelope for the remainder of the settlement period once it breaches this performance threshold. However, as the analysis in Figure 2 shows, an FSP would have to considerably underperform in order to fall below the 75% threshold in the opening period of a month and thereby lose the entire availability payment for the period.[16] For example, for an FSP to breach the performance scalar threshold within the first 10 days (i.e., y-axis) of a month it would need to be non-compliant in c.80% (i.e., y-axis) of its operating envelope events in each of those 10 days.

[16] An FSP still faces the performance scalar penalties for increments up until this threshold as a strong disincentive against underperformance up until the 75% threshold.

## Figure 2: Level of non-compliance needed to breach the performance scalar cap in the first X consecutive days of a month




*Note: This analysis assumes FSPs face the largest feasible number of restricting half-hourly 'events' within their daily operating envelope over a 24hr period (i.e., 48). This upper limit is illustrated to show a possible 'worst-case' scenario for an FSP and therefore the relationship outlined above is likely to be even less punitive in practice.*

*A logarithmic trendline has been adopted for illustrative purposes. The data points themselves may sit slightly above or below this trendline.*

ESB Networks considers that this analysis supports the decision to withhold an FSPs monthly availability payment if it falls below the proposed monthly performance threshold. As shown above, for an FSP to trigger this threshold at the beginning of the period it would have to deliver a significant underperformance (and therefore cost to the system). Moreover, poor performance in the opening period of a month can cast doubt on the reliability of that FSP's service delivery in the remaining period of the month. In this sense, the incentive properties created by a sudden drop-off in the performance scalar is acceptable given the value of such a deterrent effect.

ESB Networks does not consider that the performance scalar methodology should change over time to reflect expected asset degradation.

ESB Networks will implement the performance scalar by assessing FSPs metered data against their operating envelopes over this period.

### Additional measures and exceptions

ESB Networks agrees that the conditions in which a 100% sharing factor is applied should be clear and transparent. This measure is intended to claw-back the potential financial benefits FSPs receive from materially departing from their operating envelope in order to take advantage of alternative merchant opportunities in the wholesale market. Whilst the detail will be confirmed at the CfT stage, it is expected that if the FSP deviates from the

operating envelope for any period of time then the sharing factor is set to 100%. ESB Networks considers that this rule provides sufficient certainty to FSPs on the conditions in which this measure would apply.

ESB Networks also agrees that it should be clear under what conditions exceptions will be applied to post-energisation damages. As a matter of principle, exceptions should apply where the performance suffers as a consequence of third-party actions or events, and where reasonable mitigation is not possible for the FSP. These will be specifically defined at CfT.

Lastly, in relation to the request for an understanding of the expected MWh's at each location ESB Networks agrees that this would be beneficial to potential applicants in cost forecasting as well as maintenance and degradation forecasting. ESB Networks will publish annual expected indicative MWh usage as well as indicative annual operating envelopes as part of the CfT.

### *5.3.4 ESB Networks' recommendation*

**ESB Networks Recommendation**

- There will be a performance-based incentive regime to ensure the reliable delivery of flexibility services according to the operating envelope issued by ESB Networks. The concepts of a performance scalar and Demand Weighting Factor introduced in the consultation will be retained as part of the incentive regime, as well as the detailed set of formulae prescribing how half hourly performance will be calculated.
- The performance scalar shall be calibrated with a gradient of 4% reduction in monthly availability payment for every 1% reduction between 100% and 75% performance and a minimum performance threshold of 75% over the monthly assessment period (after which availability payments are withheld for the remainder of the period).
- The Demand Weighting Factor will be set on an annual basis.
- To mitigate financial risk to FSPs, ESB Networks will set an initial grace period in the DFP contract which temporarily waives the financial consequences of the performance scalar. ESB Networks is minded to set the grace period to 2 months (to be confirmed at CfT).
- ESB Networks shall not commit to a fixed schedule for the Demand Weighting Factor over the contract duration.
- In circumstances where an FSP deviates from the limits of its operating envelope in order to be dispatched in other markets it shall face a sharing factor of 100%.
- Damages will not apply when non-delivery of flexibility is due exceptional circumstances outside the control of the successful tender. These circumstances will be defined at CfT.

## 5.4 Sharing Factor Technoeconomic analysis

### *5.4.1 ESB Networks' proposal*

In our consultation paper, we proposed the following:

**ESB Networks' consultation proposal**

- The combination of floor price and sharing factor should provide strong incentives to providers to make optimal use of the Flexible Service Assets (FSA) across the markets they operate in, achieving the most efficient outcomes for electricity and DUoS customers.
- A sharing factor of 70% to 80% will ensure (a) the DUoS customer shares the benefit of the efficient operation of the Flexible Service Assets (FSAs) which they are supporting, thus minimising the net cost to the DUoS customer and limiting the risk of customers paying for above-competitive-level returns (b) sufficient incentive for the contracted Flexibility Service providers (FSPs) to participate efficiently in other markets when not conflicting with the DFP operating envelope instructions.
- This result is based on an in-depth technoeconomic modelling of operating the FSA in the SEM under varying levels and duration of constraints to revenue stacking. This analysis considers a range of potential competitively determined floor payments and FSP net revenues (and operational costs) from other markets.
- The sharing factor will only be applied to net revenues (rather than gross revenues) earned in other markets.
- For settlement, FSPs will need to provide evidence of their trading balance sheets each month in existing energy markets so that ESB Networks can ensure that the correct amount of revenue is recovered.

### *5.4.2 Summary of consultation responses*

The consultation asked respondents the following questions, with the responses received summarised below:

**Question 18**

- What are stakeholders' views on the proposed sharing factor range of 70%-80%

Seven respondents considered that the proposed range for the sharing factor may be too high. Of those respondents, most stated they could not definitively judge the appropriate level of the sharing factor without access to ESB Networks underlying modelling approach and inputs. Respondents which provided supporting arguments for a lower sharing factor stated that the current proposal (of a higher sharing factor with higher availability floor price) placed too much market risk on FSPs for too little revenue. No respondents presented their own analysis of an appropriate sharing factor level in response to the consultation.

Ten respondents requested access to the modelling approach adopted by ESB Networks - including trading and operating behaviour, location reserve prices and energy price assumptions. It was suggested that without further information and consultation, there is a risk of low market uptake of this product.

Two respondents questioned how a sharing factor in this range best promotes market efficiency.

### Question 19

- What would the expected impact of a sharing factor within this range be on the incentives for FSPs to participate in existing energy markets? Please provide specific evidence to support your views

Nine respondents considered that the proposed sharing factor range reduces the benefit to FSPs of participating in other markets (compared to a lower sharing factor) and so lowers the incentive to revenue stack. Of those respondents, several considered the current proposal would deliver an unbalanced distribution of risk and reward – based on a presumption that FSPs would bear most (or all) market-related risks compared to only 20%-30% of the rewards.

Four respondents noted that a higher sharing factor may result in higher tender bids for floor payments, with one respondent suggesting this could increase overall cost to the DUoS customer (compared to a lower sharing factor with higher availability floor payment).

Several respondents noted that reduced market stacking incentives under the proposed sharing factor range may lead to inefficient market outcomes, either by amplifying distortions in the wholesale market or by undermining efficient asset operation.

### Question 20

- If you disagree with the proposed sharing factor range please outline your reasoning and the proposed sharing factor that you would suggest.

One respondent suggested a sharing factor of 50%, with a lower availability floor payment, would improve value for money for DUoS through more efficient asset operation in other markets.

One respondent suggested that the sharing factor vary over time for each FSP such that, once the DUoS customer has recovered the cost of flexible procurement, the sharing factor is reduced to 0%.

A further respondent suggested that the sharing factor should be an optional parameter within the tender bids of FSPs.

### Question 21

- What are stakeholders' views on the additional operational costs that will be incurred as a result of participating in other existing energy markets? Please provide detailed responses on both the type of costs and level of costs that FSPs would incur.

Two respondents stated that all incremental operating costs of cross market participation should be included. One respondent noted that the incremental operating cost, including both their operation and trading activities, will vary with the size of the asset.

### *5.4.3 ESB Networks' response*

ESB Networks notes that respondents' answers to this section can be broadly grouped into four categories: general efficiency properties of a floor and share mechanism, investment and market stacking incentives under current proposals, alternative sharing factor proposals, inputs into the technoeconomic analysis. ESB Networks responds to each of these items are set out below.

#### The efficiency properties of a floor and share support mechanism.

Two respondents requested that ESB Networks shows an analysis of the overall market efficiency of a floor and share support mechanism for medium-term demand flexibility. ESB Networks refers respondents back to the first consultation in which a discussion of the costs and benefits of different support schemes was assessed within the context of the expected operating characteristics of the demand flexibility product.[17] ESB Networks reminds respondents that, compared to a counterfactual of rate-of-return system services contract model, a floor and share mechanism strikes an improved balance between providing revenue certainty to providers, incentivising efficient asset operation while also reducing overall costs to the customer. Specifically, by enabling revenue stacking, assets are more efficiently utilised from a system perspective and this benefit in turn reduces the cost to the DUoS customer through the sharing factor.

A floor and share model for supporting electricity storage has been discussed by the industry for some time now[18] and these schemes have been for electricity storage procurement in various jurisdiction[19].

#### Investment and market stacking incentives under current proposals.

The revenues available to FSPs under the Demand Flexibility Product (DFP) come from three components of an overall package: (a) the availability floor price, (b) revenues from the 'net revenue' calculation before the sharing factor is applied to offset deductible costs and (c) the post-sharing factor net revenues derived from wholesale, balancing and

[17] DOC-191223-HVV, Demand Flexibility Product Proposal, December 2023, Section 3.4.1
[18] See for example, Long-duration storage and flexibility : Income stabilisation mechanism (KPMG LLP, December 2021)
[19] The Capacity Investment Scheme (CIS) in Australia

capacity markets. In a competitive tender with appropriately set reserve prices, a higher sharing factor will induce tender bids so that FSPs continue to recover their required investment returns. On the other hand, a lower sharing factor will allow FSPs to submit lower availability floor price bids.

Some respondents considered that a sharing factor in the range of 70% to 80% (in the favour of DUoS customer) places greater overall investment risk on FSPs compared to a lower sharing factor as market revenues are uncertain. ESB Networks has taken this feedback on board and has conducted further analysis which suggests that a 50% sharing factor allows for an equal distribution of risk and reward and incentivises FSPs to maximise their performance in other energy markets.

The variable costs which are deductible from the calculation of net revenues to which the sharing factor applies will include eligible fuel costs and certain penalties which FSPs incur in other merchant arrangements. Eligible fuel costs will include charging costs and fuel costs for other technologies. It is proposed that there will will be a cap methodology in respect of fuel costs and the methodology will be set out in the CfT documentation. The objective of applying a cap methodology is to seek to ensure that the DUoS customer is not subsidising excessive fuel costs. Careful consideration will need to be given to the cap methodology and the implementation.The sharing factor will be applied to (positive) net revenues, if FSPs (a) have complied with their operating envelope and (b) their eligible variable costs are less than revenues earned over the settlement period. In cases where variable costs exceed revenues, the sharing factor will not be applied. That is, negative net revenues will not be shared with ESB Networks.

There are two possible scenarios for net revenue recovery:

A. FSP earns positive net revenues: in this case a 50% sharing factor is applied to these net revenues.

B. FSP earns negative net revenues: in this case no sharing factor is applied.

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Whilst exact definitions will be confirmed at CfT, ESB Networks considers the following variable costs are expected to be deducted from the calculation of net revenues:

(a) eligible fuel costs which include energy costs such as for example the cost of charging for a battery storage asset as well as other fuel costs required for the generation of energy and;

(b) penalties which FSPs incur in other merchant arrangements as a direct consequence of complying with their DFP operating envelope. With regards to penalties, ESB Networks is minded to allow FSPs to recover the following before net revenues are shared:

- Capacity Market penalties (‘difference charges’) incurred by FSPs, as measured by the difference between the upper limit of an FSP’s operating envelope and the FSP’s obligated Capacity Market capacity during a system stress event. These penalties may be recovered before net revenues are shared if FSPs can demonstrate they were not able to avail themselves of their Capacity Market obligations through secondary trading arrangements. This will be confirmed at CfT stage.

- Imbalance charges incurred by FSPs which are caused by a DSO stop instruction. FSPs will not recover imbalance charges if these charges could otherwise have been avoided whilst remaining in the operating envelope.

These costs will be assessed on a monthly ex post basis from outturn expenditure submitted as part of the overall DFP settlement process. Settlement will occur on a monthly basis and the exact detail, and timings will be included as part of the CfT documentation along with an example performance statement.

Respondents have highlighted that exposure to negative price spreads is partly driven by an FSA’s operating envelope which is a risk which FSP’s have limited ability to manage However, ESB Networks’ indicative analysis shows that the risk of net negative wholesale revenues is low in any given week (see Annex 4). Moreover, the condition under which eligible fuel costs are not recovered before revenues are shared is unlikely since this requires that average fuel costs exceed average wholesale revenues over a full month (i.e., the settlement period). ESB Networks also believes that the newly reduced sharing factor of 50% more than compensates for any rare occasion that this occurs.

However, whilst the risk is low, ESB Network’s considers that entirely removing this merchant risk from FSAs may create perverse incentives since an FSA still maintains a degree of choice in the way that it satisfies its DFP envelope.

In particular, in the case of a Battery Energy Storage System (BESS), an operating envelope may set out the maximum charge and discharge levels over a particular day. However, within this envelope, the FSA still has some residual flexibility over exactly when, and by how much, to charge and discharge. ESB Networks considers it generally appropriate to reduce FSA’s downside risk from complying with its operating envelope by allowing it to recover its charging costs before the sharing factor is applied to net revenues.. However, it is also appropriate to disincentivise uneconomic trading positions where they could be avoided to protect the DUoS customer from undue costs.

ESB Networks therefore considers an appropriate balance is for FSA’s to only share *positive* net revenues (excluding variable costs, which includes fuel costs) with the DUoS customer at the end of the monthly settlement period. In the case of BESS, this would generally imply that the average wholesale cost of charging is lower than the average wholesale revenue of discharging over a month. For the avoidance of doubt, ESB Networks

expects a FSP's bid to capture (and therefore recover through its availability payment) any forecast trading losses that it expects to incur as a result of complying with its operating envelope.[20]

### Alternative sharing factor proposals

ESB Networks welcomed alternative sharing factor design proposals from respondents as part of this consultation – in particular, that the sharing factor: (a) be reduced to 0% once DUoS customers have recovered the cost of flexibility procurement and (b) that the sharing factor be an optional parameter in the tender. These proposals are discussed in turn below.

ESB Networks considers that a sharing factor which changes to 0% after DUoS customer recovers the cost of the flexible procurement offers an inequitable balance of risk between investor and the DUoS customer. In particular, under this proposal, the DUoS customer accepts all of the upfront risk of funding the flexible asset yet is offered none of the potential future reward should the asset over recover its costs. ESB Networks therefore does not think that this proposal offers value for money for the DUoS customers.

ESB Networks also notes that setting the sharing factor as an optional parameter in the tender process introduces significant complexity in the setting of reserve prices and assessing competing bids against one another. On the other hand, the purported benefits of such an approach are unclear. ESB Networks therefore does not consider this to be an appropriate approach.

### Inputs and assumptions into the technoeconomic analysis

ESB Networks notes that the technoeconomic modelling contains information which may reveal the availability payment reserve prices that could lead to a poor tender outcome for the DUoS customer. On the other hand, ESB Networks agrees that certain operating assumptions are needed by FSPs to assess their market revenues and costs as part of the bidding process. Specifically, ESB Networks considers it appropriate to share indicative operating envelopes, average cycling assumptions and analysis relating to losses that are enforced in wholesale market trading to provide FSPs with an illustration of market stacking opportunities at a case study location. These can be found as follows:

- Annex 1 – Operating envelopes
- Annex 2 – Cycling statistics
- Annex 4 – Wholesale market trading

These inputs will be provided as an indication of what operations may be expected to look like at the location-level at CfT. It is worth noting these will only provide an indication of

[20] Our analysis in Annex 4 shows that, in the example of a BESS, these are unlikely to be material.

what expected cycling and operating envelopes may look like and this is subject to change due to the many variables that need to be accounted for when forecasting out for 15 years. However, ESB Networks does not find it justified to provide further inputs into the technoeconomic modelling (e.g., reserve prices).

### *5.4.4 ESB Networks' recommendation*

**ESB Networks Recommendation**

- ESB Networks recommends a sharing factor of 50% on net revenues which allows for an equal return for both the FSP and DUoS customer and incentivises FSPs to operate in the markets to the maximum of their capability which has further overall system benefits.
- Net revenues are defined as gross merchant revenues (across wholesale, balancing and capacity markets) less fuel costs and eligible penalties.
- ESB Networks shall allow FSPs to fully recover its eligible fuel costs and other eligible costs before the sharing factor is applied to market earnings. This will be implemented through the definition of 'net revenues' within the settlement process. These costs will only be deductible from the calculation of net revenues if FSPs have: (a) complied with their operating envelope over this period, and (b) have not incurred eligible variable costs greater than the corresponding market revenues earnt over the settlement period.
- There will never be a scenario where the share mechanism will allow for additional cost to the DUoS customer.
- For settlement, FSPs will need to provide evidence of their trading balance sheets each month in existing energy markets so that ESB Networks can ensure that the correct amount of revenue is recovered.

## 5.5 Contract termination

### *5.5.1 ESB Networks' proposal*

In our consultation paper, we proposed the following:

**ESB Networks' proposal**

- Scenarios where it may be justified for ESB Networks to terminate the contract with an FSP may include (but are not limited to): failing to satisfy technical eligibility criteria, engaging in prohibited activities (e.g., fraud), reporting false evidence within their tender, failing to secure a conditional bond or insufficiently reliable service delivery.
- The timing of the termination will inform the damages amount. Termination damages will increase progressively as the energisation date approaches and damages will be valued in €/MW. The range to base termination damages on for medium-duration FSPs is around €24,000/MW - €60,000/MW, which is a 20% uplift from comparable provisions in the Irish Capacity Market.
- The conditional bond is posted up front as part of contract award, where it is based on 100% of the termination damages.
- A flat damages rate will apply for contract termination post-energisation delivery. The damages rate will be set at the rate of €60,000/MW.
- Where a successful contract is terminated, and where the connection agreement was provided the FSA must apply for a modified connection agreement and the FSA may be disconnected while it is re-studied.

### *5.5.2 Summary of consultation responses*

The consultation asked respondents the following questions, with the responses received summarised below. Questions 22 to 25 relate to pre-energisation termination and questions 26 to 28 relate to post-energisation termination.

**Question 22**

- Do you agree with the assumptions and principles ESB Networks used to consider termination damages?

Two respondents broadly agreed with the assumptions and principles in the consultation.

Respondents noted that the principles should be transparent and should explicitly include external factors outside of developers' control.

One respondent noted generally that pre-auction safeguards offer only a limited assurance that projects will be deliverable.

### Question 23

- What are your views on the proposed value range for the termination damages?

Three respondents considered that the proposed value range is reasonable, however they noted that more clarity and detailed analysis would be required to consider these further. Another respondent requested clarification on the approach to setting termination damages.

Two respondents expressed concern with the value range, stating that this represents a significant risk to developers and that some FSPs would be less willing to engage in contracts with ESB Networks if the damages are disproportionate to the actual costs incurred.

### Question 24

- What are your views on calculating termination damages based on €/MWh versus €/MW to enable consideration of both contracted MW capacity and duration of flexibility service?

Three respondents agreed with the proposal for calculating damages in €/MWh as this better reflects the value to the grid and is consistent with penalties in other energy markets.

One respondent suggested that damages should be based on a historical estimation of non-performance damages expressed in MW and MWh, and subsequently benchmarked against the Capacity Market. One respondent noted that termination damages should be calculated based on MW volume only, as per the capacity market.

One respondent requested more information on the rationale behind damages being expressed in €/MWh and questioned whether one or both €/MWh and €/MW will be used. The respondent also noted that the MW and MWh-based damages results in different values.

### Question 25

- Do you have any views on the conditional bond value?

Three respondents were broadly supportive of the principle of a conditional bond. These respondents added that a staged bond may help to manage risk, as is done in the Capacity Market.

One respondent stated that the bond amount, the costs associated with it and the uncertainty related to factors outside of developers' control represent a risk.

Two respondents were not supportive of suspending the connection agreement if the DFP contract is terminated.

### Question 26

- Do you agree with the proposed list of example scenarios that ESB Networks would consider as grounds for terminating the contract with the FSP?

Three respondents broadly agreed with the proposed list of example scenarios for terminating the contract with the FSP, with respondents noting that these appear to be in line with industry norms.

Four respondents requested additional transparency prior to the CfT. These respondents questioned what constitutes 'unreliable' performance and suggested that factors outside of developers' control should be considered.

Two respondents expressed general concern that the contract terms would not be consulted on.

One respondent opposed "reliability flexibility service delivery performance" being a ground for terminating the contract.

### Question 27

- Are there other scenarios where you think ESB Networks should consider terminating the contract with the FSP?

One respondent stated that the list should be more comprehensive and suggested additional criteria should be defined, including the breach of HSEQ (Health, Safety, Environment, and Quality), E&C (Ethics and Compliance), ESG (Environmental, Social, and Governance) standards. The respondent added it is essential that ESB Networks can terminate the contract in the case of financial instability and insolvency of the FSP.

### Question 28

- Do you have any views on how the financial value should be set for the termination circumstances?

One respondent suggested that the value should be the same as the Capacity Market.

## *5.5.3 ESB Networks' response*

Responses to these questions can be grouped into pre-energisation damages and post-energisation damages. These are considered in turn below.

### Pre-energisation damages

ESB Networks notes the broad support for the assumptions and principles proposed and acknowledges respondents' concern that factors outside of FSPs' control should be considered. ESB Networks wishes to reaffirm that, as highlighted in Section 5.5, factors outside of FSPs' control will be taken into account when considering the potential

termination of a contract. Further discussion on this topic is also included in the post-energisation section, below.

ESB Networks also notes that respondents' views were mixed regarding the proposed damages values, and that some respondents have requested more information on the approach to setting these values and the balance of risk on developers.

The termination damages range has been informed by the system costs incurred as a result of contract termination. As FSPs' are best placed to manage the risk of termination, they should therefore face a financial incentive consistent with its cost to the system. ESB Networks considers that the Capacity Market is a relevant benchmark for the value of termination damages. However, as the replacement costs in the Capacity Market are not subject to the same local constraints as DFP, an uplift to the Capacity Market termination damages is appropriate.

ESB Networks welcomes the suggestion that damage values could be based on the historic estimation of damages from non-performance, before being benchmarked against the Capacity Market values. This approach would allow for the estimation of termination damages that accurately reflect the costs incurred as a result of termination. However, it is not clear how termination damages would be estimated initially (i.e., before historic evidence has become available). ESB Networks considers that linking damages values to those used in the Capacity Market strikes a balance between the need for damages to be cost reflective and the need to provide FSPs with certainty on the costs they face as a result of termination at this stage.

ESB Networks notes the broad support for damages to be expressed in €/MWh. However, to remain consistent with the floor price received by FSPs, and to ensure termination damages are technology neutral and reflective of the needs of the network, ESB Networks considers that damages expressed in €/MW are most appropriate. Proving tests will also be used to ensure an FSP can also meet the relevant MWh requirements at each location.

ESB Networks notes the broad support for a conditional bond in principle and welcomes the suggestion for the conditional bond to be staged. ESB Networks considered the possibility of allowing for a staged conditional bond, as is done in the Capacity Market. While a staged bond would help reduce the financial burden placed on FSPs, ensuring that a significant proportion of the conditional bond is posted up front helps to ensure that only financially committed FSPs' are awarded a DFP contract. This helps to limit the termination risk that is placed onto the DUoS customer. ESB Networks also notes FSPs are able to reflect financial risks associated with posting a performance bond in advance of their tender bid. ESB Networks therefore proposes the full performance bond up front. The performance bond will only be drawn down as a last resort and will only be held until the point of energisation and successfully passing proving tests.

ESB Networks notes respondent feedback that tendering safeguards offer only limited assurance that projects are deliverable. As is the case with the performance bond, ESB Networks considers that tendering safeguards are an important part of the DFP that are designed in a way that ensures committed and deliverable projects are selected at the tender stage.

ESB Networks notes respondents' views regarding the suspension of FSAs' connection agreement where a successful contract is terminated. ESB Networks reminds respondents that the locations selected for this procurement are in constrained parts of the network. A connection awarded at these locations on a provisional basis is explicitly for the purposes of delivering an operating envelope designed to alleviate these constraints. If a DFP contract is terminated, and therefore the operating envelope no longer applies, there is a risk that the connection creates further problems to the network.

Moreover, the DFP aims to procure flexibility services at the lowest cost to the DUoS customer whilst providing an investible framework for FSPs. ESB Networks does not consider it appropriate that FSPs should stand to benefit from an enduring network connection by terminating the services which the connection was designed to serve. This does not represent an efficient outcome for the DUoS consumer.

### Post-energisation termination damages

ESB Networks notes respondents broadly supported the example scenarios given for terminating a contract. Several respondents requested additional detail in relation to the scenarios presented, including on how unreliable performance will be defined. ESB Networks shall transparently define an exhaustive set of possible scenarios for contract termination as part of CfT.

ESB Networks does not intend to consult on the final DFP contract per ESB Networks typical procurement processes. However, ESB Networks has already published a sample contract[21] based on existing pilot contracts, noting that there will be changes to final contracts issued at CfT.

ESB Networks notes respondents' view that post-energisation termination damages should be based on the Capacity Market. As discussed in the pre-energisation section above, ESB Networks considers that the Capacity Market is a relevant benchmark for the value of termination damages. However, as the replacement costs in the Capacity Market are not subject to the same local constraints as DFP, an uplift to the Capacity Market termination damages is appropriate. ESB Networks is of the view that post-energisation termination damages should be set equivalent to the upper limit of the pre-energisation termination

[21] pilot-1-rft---section-2-sample-contract-pdf-final.pdf

damages, as it is expected to be more costly for ESB Networks to mitigate the impacts of termination during the contract life.

### *5.5.4 ESB Networks' recommendation*

**ESB Networks Recommendation**

- ESB Networks shall transparently define the scenarios which will trigger contract termination.
- The termination damages will increase progressively as the energisation date approaches and damages will be valued in €/MW. ESB Networks recommends that the damages value range is €24,000/MW - €60,000/MW, which is a 20% uplift from the rates in the Capacity Market.
- The conditional bond is posted up front as part of contract award, where it is based on 100% of the termination damages. The conditional bond will only be held until the point of energisation.
- Where the contract is terminated, the FSA must apply for a modified connection agreement.
- We propose applying a flat damages rate for any termination post-energisation, set at the rate of €60,000/MW.

## 5.6 Proposal for tendering of locations

### *5.6.1 ESB Networks' proposal*

In our consultation paper, we proposed the following:

**ESB Networks' proposal**

- DFP procurement will adopt locational batching of tenders to enable competition across locations based on value for money, deliverability, and operability.
- All locations that would benefit from the DFP would be included in the first procurement batch in order to maximise competition and value for money to the DUoS customer.
- Through repeated tendering, locations not selected in a given procurement round could be included in future batches as well as locations that were previously selected, but which still have a flexibility need.

### *5.6.2 Summary of consultation responses*

The consultation asked respondents the following questions, with the responses received summarised below:

**Question 29**

- Do you agree with the proposed method of locational procurement, and if not please specify your reasoning?

Most respondents broadly agreed with the proposed approach to locational procurement. However, six respondents requested that ESB Networks reveal information on the relative value of different locations within the first procurement batch. The location-specific information which respondents requested included the following:

- priority rankings,
- reserve prices,
- constraint levels,
- Expected MWh of flexibility needed.

Respondents stated locational value signals (i.e., priority rankings, reserve prices) were needed for FSPs to assess which locations their tender bids were most likely to be successful. One of these respondents stated that FSPs would face too high an administrative burden if all locations were tendered in the first procurement batch. Respondents requesting location-specific network characteristics (i.e., constraint levels and MWh flexibility needed) stated that this was needed for FSPs to develop financial models to inform their tender bids.

Three respondents requested clarity ahead of CfT over the assessment criteria, and supporting evidential requirements, for selecting winning bids across locations. Respondents stated that this detail is needed for FSPs to build business cases. One respondent also noted that the second consultation stated that locational competition was on a 'value for money' basis only (rather than multi-criteria assessment including deliverability and operability as introduced in the first consultation).

Two respondents noted that FSPs need to understand how ESB Networks will make reinforcements over time to evaluate whether a bid for a location in the first procurement would be re-assessed in potential future rounds. Of these respondents, one requested that disclosing future locations at the earliest opportunity will maintain investment signals needed to keep projects viable for subsequent procurement batches.

Some respondents suggested that carbon abatement should be considered as an objective or assessment criterion.

Finally, two respondents also noted that factors such as the likelihood of obtaining planning permission should be considered when selecting the list of locations to ensure that bids are attracted to locations with the best chance of timely energisation.

Respondents noted the importance of ESBN disclosing future locations at the earliest opportunity to allow FSAs to support the network.

### *5.6.3 ESB Networks' response*

Responses to this question can be grouped into locational value signals, assessment criteria, and future procurement batches. These are considered in turn below.

#### Locational value signals

As outlined in the first recommendations paper, competition across locations (within procurement rounds) has been selected as the procurement approach as it is expected to result in more competitive bids from potential providers which might otherwise have market power if bids were assessed only "within location", which could ultimately increase costs for the end consumer.

ESB Networks considers that the greater the number of locations included in a procurement round, the more opportunity there is for competition to emerge which could result in lower average bid prices. Information which reveals the relative value of each location could undermine competition - either because it will result in fewer bids concentrated in a smaller number of locations (reducing competition across locations) or by reducing price competitiveness at individual locations (reducing competition within location).

The benefits of locational value signals claimed by respondents appear to amount to a reduced administrative cost to FSPs from participating in the tender. ESB Networks interprets this benefit as being the avoided incremental administrative cost of submitting

tenders across additional locations with an unknown chance of success. ESB Networks considers that this incremental cost is unlikely to be significant, and that any benefits to FSPs of reducing this cost is unlikely to be outweighed by the detriment this will have on competition. ESB Networks reminds respondents that FSPs may submit bids to as many locations as they are able to.

#### Assessment criteria

ESB Networks is cognisant that FSPs requested further information in order to begin developing financial models to inform their tender bids. However, the detailed assessment criteria framework itself shall be released at CfT as per ESB Networks' standard procurement process. As set out and defined in the first consultation, this shall follow the principles of value-for-money, deliverability and operability (not just 'value for money'). This should not impede FSPs from considering the financial viability of their projects in the meantime to allow for timely submission of bids following the issuance of the CfT.

#### Future procurement batches

ESB Networks expects to be publishing its National Development Plan in 2025 and a Flexibility needs assessment in 2026 which shall provide FSPs with an indication of network planning over the next 10 years.

### *5.6.4 ESB Networks' recommendation*

**ESB Networks Recommendation**

- All locations shall be included in the opening procurement batch in order to maximise competition and value for money to the DUoS customer.
- ESB Networks shall publish the detailed assessment criteria at CfT. These shall follow the three principles of value-for-money, deliverability and operability.
- Through repeated tendering, locations not selected in a given procurement batch could be included in future batches as well as locations that were previously selected, but which still have a flexibility need.

## 5.7 Early energisation

### *5.7.1 ESB Networks' proposal*

In our consultation paper, we proposed the following:

**ESB Networks' proposal**

- Energisation before the 32-month energisation date shall be optional.
- Eligibility for early energisation will need to be assessed on a case-by-case basis based on network need during the tender process.
- Delay damages would not apply ahead of the 32-month energisation date.

### *5.7.2 Summary of consultation responses*

The consultation asked respondents the following questions, with the responses received summarised below:

**Question 30**

- What are your views on early energisation incentives, where congestion management is needed immediately (e.g. at time of tender)?

Nine respondents agreed with the possibility of early energisation, with a number of these respondents suggesting that the incentives for early energisation should be clear.

One respondent stated that early energisation would be difficult, and that planning permission would be required at the tender stage for this to occur.

One respondent suggested that early energisation should not be incentivised more than a year ahead of the delivery period to avoid gaming.

One respondent opposed early energisation, noting it creates a risk to deliver projects earlier than expected at a cost to the consumer.

**Question 31**

- Do you think there should be additional incentives (other than floor payments) that should apply to early energisation?

One respondent considered that the full floor and share mechanism should apply for early energisation.

Five respondents argued that additional incentives for early energisation should be considered. Some respondents suggested that rewards could mirror damages (for late energisation) or allow for a lower sharing factor initially. Additional incentives would help to cover additional asset cycling costs which affect end of life performance.

One respondent stated that floor payments are sufficient to incentivise early energisation.

**Question 32**

- Do you see any technical challenges of new Flexible Service Assets (FSAs) being able to have a lifetime of greater than 15 years?

Five respondents expressed concerns relating to the impact of asset degradation on asset lifetimes. A number of these respondents highlighted that utilisation assumptions are unknown and that asset cycling assumptions are important to know in advance to ensure that assets can meet operational demands.

One respondent stated that battery assets will have to be oversized to allow for uncertain degradation levels resulting in higher bid prices. Another respondent noted that a moderate cycling profile for batteries can extend the asset lifespan.

### *5.7.3 ESB Networks' response*

In light of the broadly positive feedback regarding the possibility to energise ahead of the set energisation date, ESB Networks recommends that where early energisation is granted, FSPs will be able to earn revenues from the full floor and share mechanism at an earlier stage. ESB Networks reiterates that eligibility for early energisation will be assessed on a locational basis depending on whether there is a network need for early energisation at a particular location. ESB Networks considers that no further incentives for early energisation will be provided.

In relation to respondents' views regarding the impact of early energisation on asset performance and asset life, indicative asset cycling requirements have been provided in Annex 2 based on expected congestion management needs at a select location from ESB Networks list of published locations. FSPs face incentives to meet their obligations for the duration of their DFP contract (e.g., through the performance scalar) and therefore any decision to energise early should take these incentives into account. There will be no obligation for early energisation and so this is a risk that needs to be managed by the FSP in terms of their ability to meet the full contract duration.

### *5.7.4 ESB Networks' recommendation*

**ESB Networks Recommendation**

- If the ask arises, eligibility for early energisation will be assessed on a case-by-case basis (based on network need during the tender process).
- Where early energisation is granted, FSPs will be able to earn revenues from the full floor and share mechanism before the 32-month energisation date, ESB Networks will also be able to recover revenues as part of the same mechanism.
- Delay damages will not apply ahead of the 32-month energisation date.

## 5.8 Potential off-ramp clause

### *5.8.1 ESB Networks' proposal*

In our consultation paper, we proposed the following:

**ESB Networks' proposal**

- ESB Networks considered the option of including an off-ramp clause to allow for the contract to be terminated by mutual agreement.

### *5.8.2 Summary of consultation responses*

The consultation asked respondents the following question, with the responses received summarised below:

**Question 33**

- Are there any benefits or risks you see in having a clause like this in the contract? What are your views?

Six respondents broadly supported the inclusion of an off-ramp clause as a means of managing unforeseen circumstances, provided this requires mutual agreement. A number of respondents requested greater clarity on the clause and on the conditions under which this may apply. One respondent questioned whether anything additional was being proposed in addition to commonly used contractual terms allowing for termination by mutual agreement.

One respondent stated that the inclusion of the off-ramp clause would increase risk for FSPs.

### *5.8.3 ESB Networks' response*

ESB Networks notes the broad support for the inclusion of an off-ramp clause in principle which would allow for the mutually beneficial termination of the contract. Details on how this clause will apply and at what stage in the contract this can be triggered will be confirmed at the CfT stage.

With regards to the concern that this would increase risk for FSPs, an off-ramp clause can only be triggered if **both** the FSP and ESB Networks consider it is in their mutual interest to terminate the contract. ESB Networks considers the off-ramp clause to be a useful means of managing unforeseen risk for both parties.

In relation to the respondent's question on additional contractual terms relating to termination by mutual agreement, this will be included in the contract but it is currently envisaged that the off-ramp clause will be the only clause that relates to termination by mutual agreement.

### 5.8.4 ESB Networks' recommendation

**ESB Networks Recommendation**

- An off-ramp clause will be included to allow for the contract to be terminated by mutual agreement.

## 5.9 Phasing the delivery of capacity over time

### 5.9.1 ESB Networks' proposal

In our consultation paper, we proposed the following:

**ESB Networks' proposal**

- ESB Networks considered the potential for a phased approach to the delivery of capacity in which the developer is paid for installed capacity in increments as the network need increases over time up until the availability payment matches total installed capacity.
- In the intervening period, installed capacity which is not covered by the availability payment shall be open to trade in wholesale markets at the FSPs own expense.

### 5.9.2 Summary of consultation responses

The consultation asked respondents the following question, with the responses received summarised below:

**Question 34**

- What are your views on how this phased approach would impact the proposal of this DFP?

Five respondents were not in favour of the phasing of capacity. Respondents argued that this approach would mean FSPs would take on financial risk for the full project being realised, which would be reflected in tender bids. One respondent noted that this may increase costs for ESB Networks as it would be cheaper to install the full capacity at the beginning of the contract even if a portion of capacity is ultimately never contracted for.

One respondent stated that the impact of phasing capacity depends on who bears the cost of this approach and suggested that ESB Networks may pay a penalty in the case of not procuring the additional capacity.

### 5.9.3 ESB Networks' response

ESB Networks welcomes respondents' feedback relating to the phasing of capacity. Noting the concerns raised, the phasing of capacity is not recommended in order to avoid placing additional risk on FSPs.

### 5.9.4 ESB Networks' recommendation

**ESB Networks Recommendation**

- There shall be no phasing of delivered capacity over time. The full availability payment, based on total awarded capacity, will be paid from the point of energisation onwards subject to satisfying the contract obligations.

# 6 Annexes

## 6.1 Annex 1 – Operating envelopes

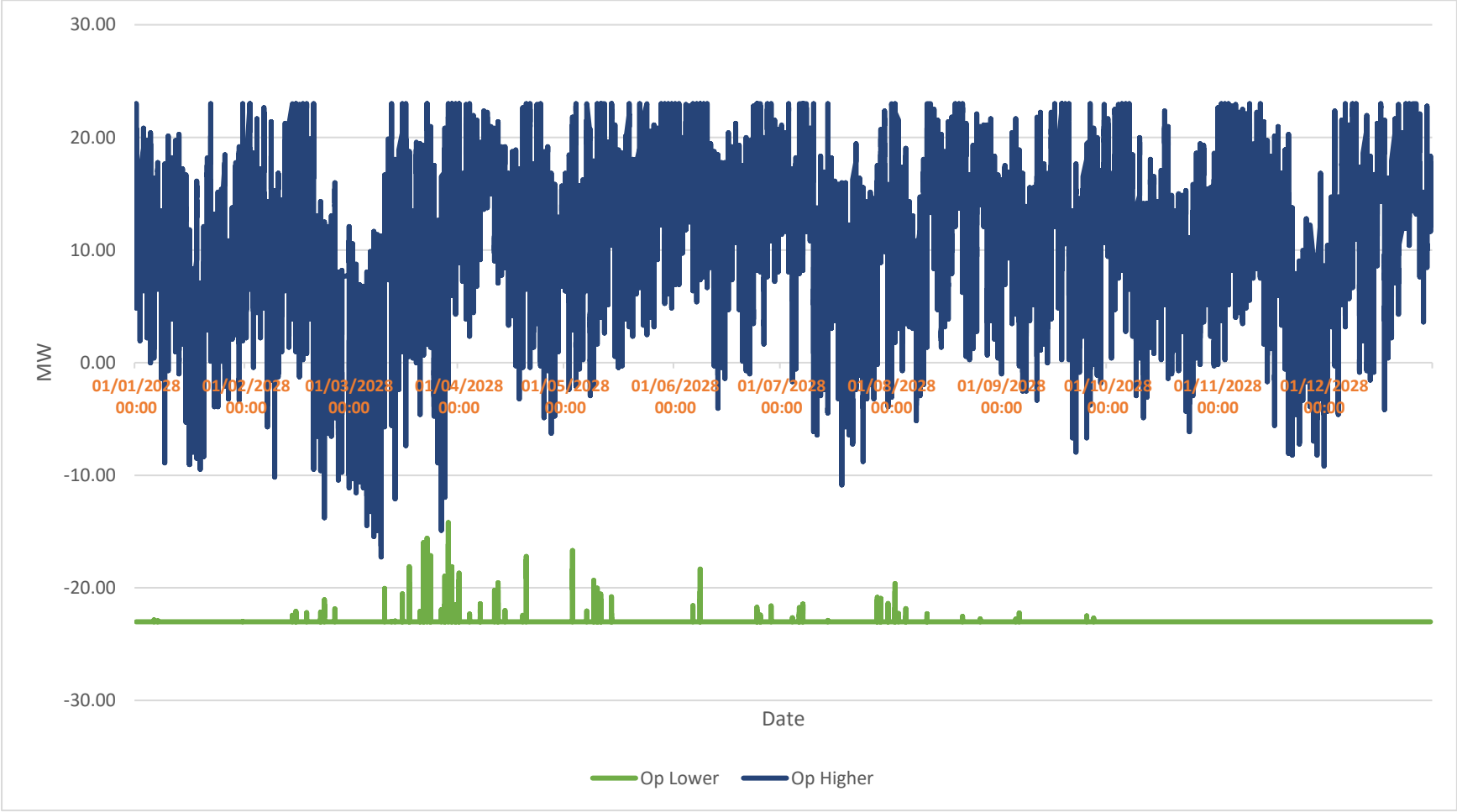
This section provides a set of annual operating envelopes for a select location from ESB Networks list of locations identified as being best suited for the Demand Flexibility Product procurement. These charts are based on current load growth forecasts in the location and illustrate the upper and lower limits of an FSPs operating envelope over a 12-month period. As part of the CfT the below graphs will be added for each location as well as indicative MWh usage.

Figure 3 represents an indicative operating envelope for 2028 for one of the locations. The green bars represent the lower limits of the operating envelope or in other words the export capability. The blue bars represent the upper limits of the operating envelope or the import capability. These represent the limits that an asset could export or import to, which as we can see in the below will vary each day and also in each half hour. The white area between the blue and green bars represents the availability that the asset has to operate between these limits. As can be seen in figure 3, the asset has considerable freedom to operate within the limits provided. Particularly in relation to the export capability of the asset in the example below there is considerable freedom.

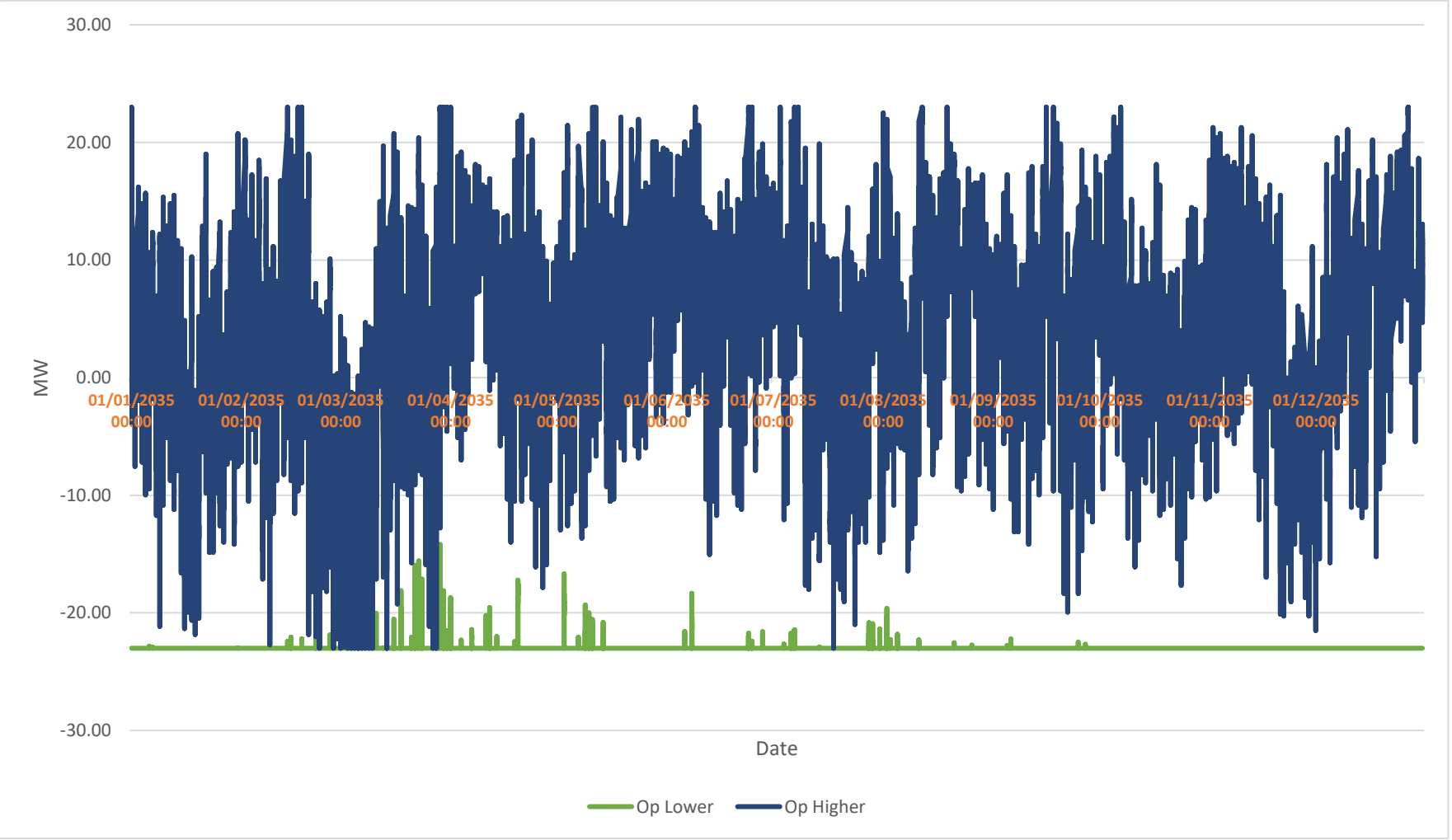
Figure 4 below represents an indicative annual operating envelope for the same location as Figure 3 but for the year 2035 which shows the changing network need overtime.

The objective of these diagrams is to provide an illustrative example of the forecasted operating envelope utilisation over a one year period of time. This should inform Flexible Service Providers of likely usage and availability to participate in other markets.

## Figure 3: A Forecasted  Annual Operating Envelope for a location in 2028



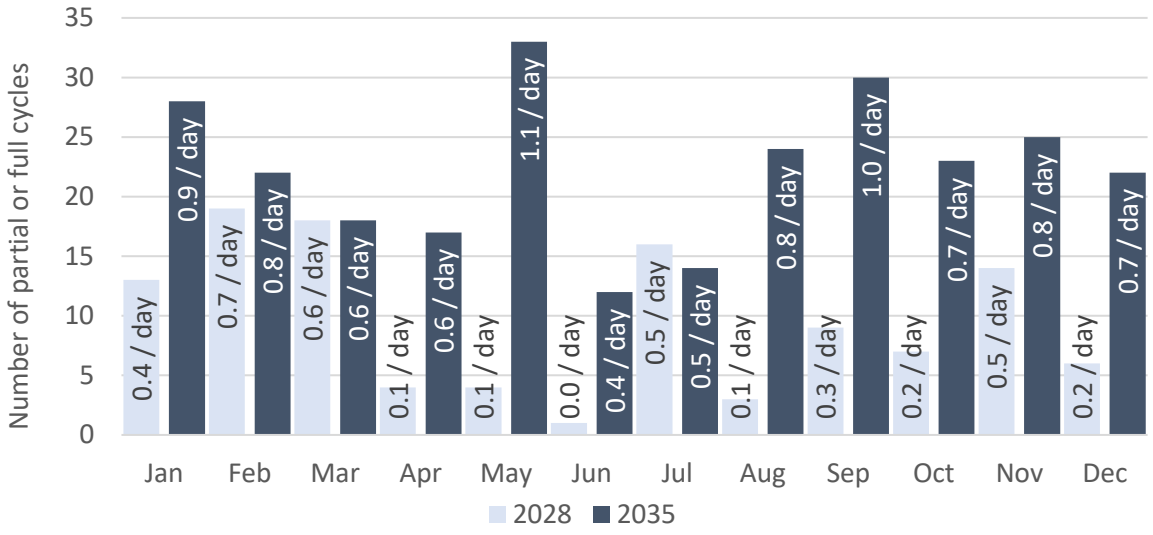
## Figure 4: A ForecastedAnnual Operating Envelope for a location for 2035



## 6.2 Annex 2 – Cyclying statistics

This section addresses a request from respondents regarding expected average cycling requirements for a BESS complying with its DFP operating envelope. The analysis below is based on the forecast operating envelopes across a full year in 2028 and 2035 in a selected published location.

### Figure 5: Forecast minimum number of asset cycles




*Note: Data labels show the average number of cycles per day in a given month*

## 6.3 Annex 3 – Pre-energisation delay damages

### Table 2: Recommended delay timings and value

| Delay timing | % of Minimum termination damages[22] |
|---|---|
| 1-3 month delay (inclusive) from energisation date | 20-39% |
| 3-6 month delay (inclusive) from energisation date | 40-59% |
| 6-9 month delay (inclusive) from energisation date | 60-79% |
| 9-12 month delay from energisation date | 80-98% |
| Missed energisation date by 12+ months | 99% |

## 6.4 Annex 4 – Wholesale market trading

This section shows an analysis of expected 'enforced losses' under the DFP, that is: periods in which the FSP trades at a loss in the wholesale market in order to comply with its DFP operating envelope. For this, we focus on the example of a BESS operating within the forecast operating envelope of a randomly selected published location in 2032.

The analysis begins by generating a daily operating profile for the BESS which (a) complies with the charge and discharge requirements of its operating envelope, and (b) follows a simplified load profile when otherwise unconstrained by the operating envelope[23]. This operating profile is matched with forecast half-hourly wholesale prices to calculate the net merchant revenues realised across each period. Finally, the number of loss-making periods is counted against different period interval lengths (i.e., days, months years).

The results show 5% of loss-making days, 4% of loss-making weeks and 0% of loss-making months in the year.

To illustrate, Figure 6 the graph below shows the half-hourly charging and discharging profile of a BESS across a 24hr period and the associated series of wholesale prices over this day. The BESS charges overnight and discharges for ESBN during the morning peak, facing a slightly lower price at discharge than it did at charge creating a loss. Whilst the operating envelope has required the FSP to take a loss-making wholesale position in the

[22] This relates to the lower range of the recommended penalty amounts (i.e. €24,000/MW) Please see Section 5.2.3 5.5 for more details on Termination Damages.
[23] This simplified load profile represents a conservative market revenues assumption since it does not respond to price signals in order to profit maximise in the market.

first half of the day, this reverses in the second half of the day as the operating envelope facilitates an evening peak discharge when prices are high.

### Figure 6: Daily operating profile of an FSP at a selected location in 2032