CMP470 – Introducing an Oversubscribed Technology Fee: Initial Impact Assessment

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Type of IA:	Qualified under Section 5A UA 2000
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Table of acronyms

BESS	Battery Energy Storage Systems
CMP	CUSC Modification Proposal
CP30	Clean Power 2030 Action Plan
CSNP	Centralised Strategic Network Plan
CUSC	Connection and Use of System Code
DESNZ	Department for Energy Security and Net Zero
FES	Future Energy Scenarios
FMR	Final Modification Report
G2tWQ	Gate 2 to Whole Queue programme
GW	Gigawatts
IA	Impact Assessment
IIA	Initial Impact Assessment
LCDP	Low Carbon Dispatchable Power
LDES	Long Duration Electricity Storage

NESO	National Energy System Operator
OTCF	Oversubscribed Technology Commitment Fee
PCF	Project Commitment Fee
SSEP	Strategic Spatial Energy Plan
TO	Transmission Owner
WACM	Workgroup Alternative CUSC Modifications

1. Executive summary

1.1. This Initial Impact Assessment considers CMP470, which seeks to introduce an Oversubscribed Technology Commitment Fee (OTCF) for generation technologies whose capacity materially exceeds a relevant government generation capacity target. The OTCF would establish a minimum level of securities or liabilities for projects of an oversubscribed technology, increasing over successive six-monthly reviews while oversubscription persists. The assessment considers the following decision options for the OTCF: the Original Proposal, six Workgroup Alternative CUSC Modifications (WACMs), and the baseline scenario. These options largely differ in the level of the OTCF and in which projects it applies to.

1.2. CMP470 has been proposed primarily in response to material oversubscription of battery energy storage systems (BESS) in the connection queue. Approximately 7GW of BESS is already energised and 83GW has Gate 2 status, compared with a maximum FES-derived forecast of 29GW by 2035. Additional protected BESS projects may also qualify for Gate 2 status in future application windows, further increasing the BESS capacity in the queue. This oversubscription risks inefficient transmission planning and investment for projects that ultimately won't connect and may divert scarce Transmission Owner resources from connecting other technologies. These potential costs would ultimately be borne by consumers and may impact the timing of achieving Net Zero.

1.3. The OTCF is expected to encourage 'lower-commitment projects' to leave the queue earlier, reducing the costs associated with oversubscription. However, there are also risks associated with higher OTCF levels. These include over-correcting and reducing the queue below the capacity ultimately required, favouring developers with greater access to liquidity rather than the projects offering the greatest consumer value, and adversely affecting competition. The scale of these impacts is uncertain – the OTCF would influence a large proportion of current projects, but it is not possible to predict how many would exit in response.

1.4. There are two main economic approaches to determining the appropriate level of the OTCF. The first approach is to set the OTCF equal to an estimate of the quantifiable direct costs that a project in an oversubscribed technology imposes on customers and the system when exiting the queue. The second approach is to force a stronger reduction in oversubscribed capacity to consider the broader benefits of reducing oversubscription more quickly, including greater certainty for system planning,

improved allocation of scarce transmission resources, and reduced risks to the delivery of wider government energy objectives. On balance, we consider the second approach (the 'wider considerations' approach) to be more appropriate in this case, as it results in lower risks to the electricity system.

1.5. Within the 'wider considerations' approach, the Original Proposal appears the best suited option to addressing the oversubscription issue, reducing costs to customers, and enabling the achievement of Net Zero. It provides a strong signal to encourage earlier queue attrition, reduces the risk of gaming, and preserves efficient locational incentives. Although there are inherent uncertainties regarding how project developers will respond to the signal, our initial assessment is that the Original Proposal is likely to deliver the greatest overall benefit to consumers and the electricity system.

1.6. Ofgem's CMP470 Minded to Consultation Document (Consultation Document) considers the findings of this Initial Impact Assessment and delivers a minded-to decision to support the Original Proposal. The Consultation Document notes that the Original Proposal is most likely to provide the strongest overall balance of effectiveness and consumer benefits and best facilitates the Applicable CUSC Objectives. Ofgem is now consulting on both the Initial Impact Assessment and the Consultation Document, before we will publish a Final Impact Assessment and Final Determination.

2. Introduction

Section summary

This is an Initial Impact Assessment for the CUSC Modification Proposal 470 (CMP470). Ofgem has a statutory requirement to complete an Impact Assessment when it appears that a proposal is important.

CMP470 is a proposal to reduce potential oversubscriptions of particular generation technologies in the Gate 2 stage of the connection queue by establishing a security or liability floor.

There is currently a material oversubscription of battery energy storage system capacity in the connection queue. This is likely to cause inefficient network build, which will ultimately lead to inefficient costs being passed on to consumers.

Scope of the Impact Assessment

2.1. This Initial Impact Assessment assesses CUSC Modification Proposal 470 (CMP470), including the Original Proposal as intended by the Proposer, and the six Workgroup Alternative CUSC Modifications (WACM).[1]

2.2. Ofgem has a statutory duty to conduct an Impact Assessment (IA) for changes where certain conditions are deemed to have been met.[2] This includes, but is not limited to, changes that have a significant impact on consumers, on persons engaged in the generation, transmission, distribution or supply of electricity, or have a significant impact on the NESO carrying out its functions. The introduction of CMP470 affects generators, transmission owners, and ultimately consumers and thus we consider it meets the threshold for requiring an IA.

2.3. As set out in Ofgem's Impact Assessment Guidance,[3] an Impact Assessment is a structured analytical process, used to evaluate the potential costs, benefits, risks, and distributional impacts of policy options against a counterfactual scenario. It

[1] These alternative options will be referred to as WACM1 to WACM6.
[2] Utilities Act 2000, s5A.
[3] *Ofgem,* 'Impact Assessment Guidance,' December 2024. See: Impact Assessment Guidance | Ofgem.

requires, to the extent possible, quantitative and qualitative analysis on monetary and non-monetary impacts a proposal will have on consumers and the energy system.

2.4. We consider that this Initial Impact Assessment, which we have carried out in line with our IA guidance, complies with these obligations by assessing the benefits, risks, and costs of implementing the Original Proposal and WACMs against the baseline scenario. This Initial Impact Assessment considers the rationale of the options and, to the extent possible, quantifies the impacts.

2.5. We note that there are key difficulties in directly quantifying the impacts of CMP470. Workgroup members noted there was insufficient data from network operators to directly quantify the benefits and costs of the modification proposal in a robust way. This is largely due to the unknown volume of projects that would withdraw from the connection queue because of the modification. As a result, any estimate of the benefits to network planning or the costs of oversubscription would be subject to uncertainty. The Workgroup therefore agreed that the issue had been considered but could not be fully evidenced quantitatively. This Initial Impact Assessment quantifies the problem and potential benefits, costs, and risks where possible and relies on qualitative evidence and economic theory where this is not possible.

2.6. This Initial Impact Assessment accompanies Ofgem's CMP470 Consultation Document.[4] This consultation should also be read alongside:

- CMP470 Final Modification Report (FMR).[5]
- Ofgem Decision on Connections Reform Package (TMO4+).[6]
- Clean Power 2030 Action Plan (CP30).[7]

2.7. We have included questions in this document, and welcome responses from anyone interested in this consultation. We will consider these responses before publishing

[4] *Ofgem,* 'Minded-to Consultation: Connection and Use of System Code CMP470: Introducing an Oversubscribed Technologies Commitment Fee', 17 September 2026.
[5] *NESO,* 'Final Modification Report, CMP470: Introducing an Oversubscribed Technologies Commitment Fee,' July 2026. See: CMP470 Final Modification Report.pdf
[6] *Ofgem*, 'Summary Decision Document: TMO4+ Connections Reform Proposals – Code Modifications, Methodologies & Impact Assessment,' 15 April 2025. See: Summary-Decision-Document-TMO4-package.pdf
[7] *Department for Energy Security and Net Zero (DESNZ),* 'Clean Power 2030 Action Plan: A New Era of Clean Electricity,' December 2024. See: clean-power-2030-action-plan-main-report.pdf

our Final Impact Assessment. For guidance on how to respond, please refer to the CMP470 Consultation Document.

Data sources

2.8. For the IA, NESO provided Ofgem with the following data:

- A list of all battery energy storage systems (BESS) projects with Gate 2 status, including information on their current and maximum securities and liabilities, connection capacity, and connection date.[8]
- Similar data on the connection queues in 2023, 2024, and 2025 for all technologies, excluding data on their current and maximum securities and liabilities.
- Aggregate data on the number of BESS project terminations and the total Cancellation Charges issued.

The problem CMP470 aims to resolve

2.9. CMP470 is a Code Modification Proposal aimed at bringing generation connection capacity in the connection queue[9] more closely in line with DESNZ's generation capacity targets. The targets are currently those set out in CP30, but this will be replaced by capacity targets set out in future electricity sector plans as published by the Government.

2.10. Currently, the BESS capacity in the connection queue, in combination with the BESS capacity already energised, is materially larger than CP30's assessment of the required BESS capacity on the electricity system. The capacity energised and in the queue is also likely to be larger than the capacity that is economically viable in the BESS market. This means the BESS connection queue is currently not representative of the total capacity of projects we would expect to ultimately connect.

2.11. This BESS oversubscription creates potential inefficiencies by requiring Transmission Owners (TOs) to invest money and resources in preparing the grid for BESS projects in the connection queue that may ultimately not be energised. This creates a risk

[8] We note that due to the securities and liabilities data being recorded over a period of time (mostly the first half of 2026) these values are an estimate of the current queue securities and liabilities, rather than exact data at a particular point in time.
[9] For more information about the Connections Reform Package (TMO4+) and the connections queue process, please refer to the CMP470 Consultation Document.

that consumers are charged for planning and building inefficient parts of the network and also face inefficient outcomes through the opportunity cost of TOs not spending time and resources on connecting other technologies.

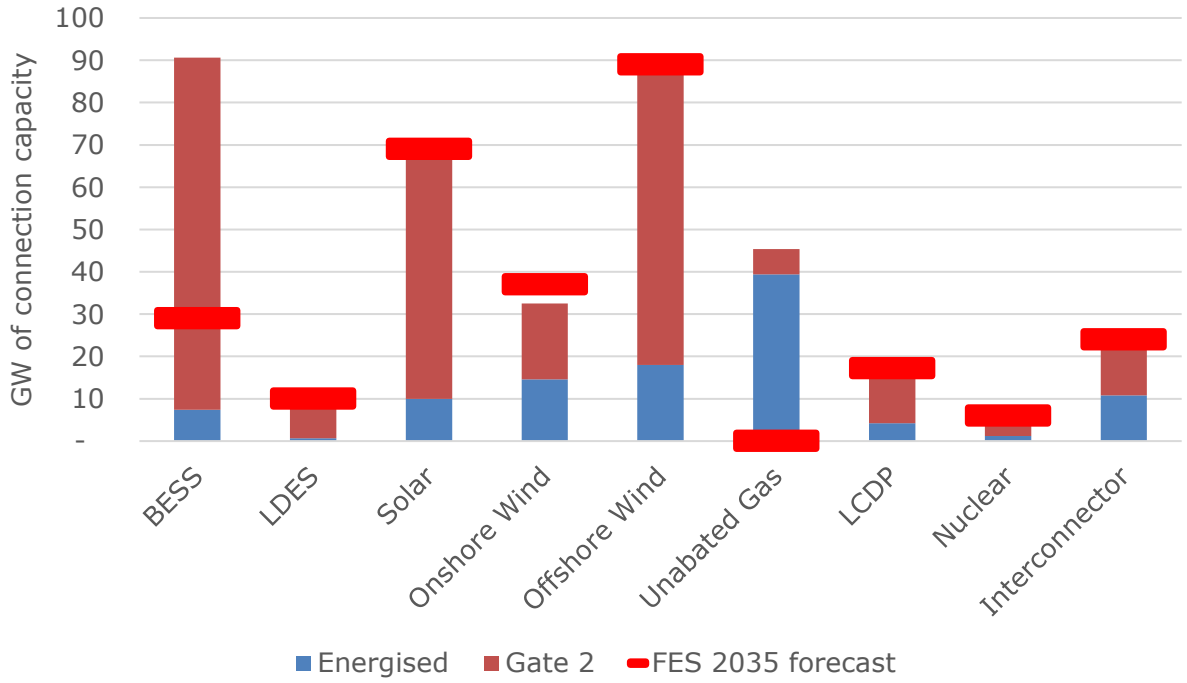
2.12. Ultimately, the OTCF will apply to all oversubscribed technologies. While our analysis focuses on the current BESS oversubscription, the potential future oversubscription of other technologies may give rise to similar issues and result in comparable costs and benefits.

Quantifying the BESS oversubscription

2.13. CP30 includes targets to reach 23-27GW of BESS capacity by 2030, and the Future Energy Scenarios (FES)-derived capacity forecast (FES 2035) is 24-29GW by 2035.[10] Currently, there is approximately 7GW of BESS capacity already energised across Great Britain and approximately 83GW of projects with Gate 2 status.[11] Additional projects are also expected to receive Gate 2 offers in the coming Gate 2 application window.[12] The sum of energised BESS systems and those with Gate 2 status is more than 210% higher than the FES 2035 maximum target. As shown in Figure 1 below, the scale of this oversubscription is significant, and is presently unique to BESS.

[10] *DESNZ*, 'Clean Power 2030 Action Plan: A New Era of Clean Electricity,' December 2024.
[11] Gate 2 status means a project has or qualifies to get Gate 2 offers and enter a contractual arrangement to connect to the grid on a specified energisation date. The project is thus liable for certain connection fees and Cancellation Charges.
[12] *NESO,* 'CMP470 Final Modification Report (FMR),' p.27. Note: Not all projects with Gate 2 offers will accept, and NESO is also considering avenues for not providing Gate 2 offers to some of these projects.

Figure 1: Future generation connection expectations, compared to FES 2035 planning targets



Note: this figure does not show Gate 1 status projects, or pre-Gate 1 status projects.

2.14. This issue is currently unique to BESS, though other technologies might reach oversubscription in the future Gated Application Windows, depending on how many applications come forward. The oversubscription is largely a result of the transitional arrangements under the Connections Reform Package (also known as TMO4+). The Connections Reform Package prevented Gate 2 offers being made to projects whose technology type was already oversubscribed. However, under the transitional arrangements, projects which had submitted a planning application before 21 December 2024 and met other land rights or planning consent criteria were given protection that they would receive Gate 2 offers in future windows[13], even though they don't meet the strategic criteria and are oversubscribed. As BESS projects were generally able to submit planning applications and meet the other criteria more quickly than other technologies, a disproportionately large number qualified for Gate 2 offers. As a result, more BESS projects received Gate 2 status than were required to meet the CP30 targets.[14]

[13] For more details on the exact requirements, see the Consultation Document and *Ofgem*, 'Summary Decision Document: TMO4+ Connections Reform Proposals – Code Modifications, Methodologies & Impact Assessment,' 15 April 2025.
[14] The Connections Reform Programme noted this was a key risk when approving the package, but at

2.15. In the baseline scenario, we expect that many of the BESS projects with Gate 2 status will eventually exit the queue, resulting in a total connected BESS capacity that is closer to the CP30 target. Some projects in the connections queue are progressing relatively slowly, have made limited investments, and are likely waiting to see the state of the future BESS market before making stronger investment decisions. We will refer to these as 'lower commitment projects'. In some cases, projects may be lower commitment because developers have already seen a reduction in the expected profitability of projects and have thus paused them for reassessment if the market changes. In other cases, larger developers may have a portfolio of projects, of which they only plan to energise a fraction. We understand some BESS projects are also trying to modify their Gate 2 offers to connect instead as data centres.[15] Many of these lower commitment projects remain in the queue because they have low or no costs to doing so. Eventually though, these projects will face increases in Cancellation Charge liabilities and securities as the projects near their contractual connection dates. We expect this will force developers to assess their projects' viability more fully, resulting in many projects exiting the queue when faced with these charges.

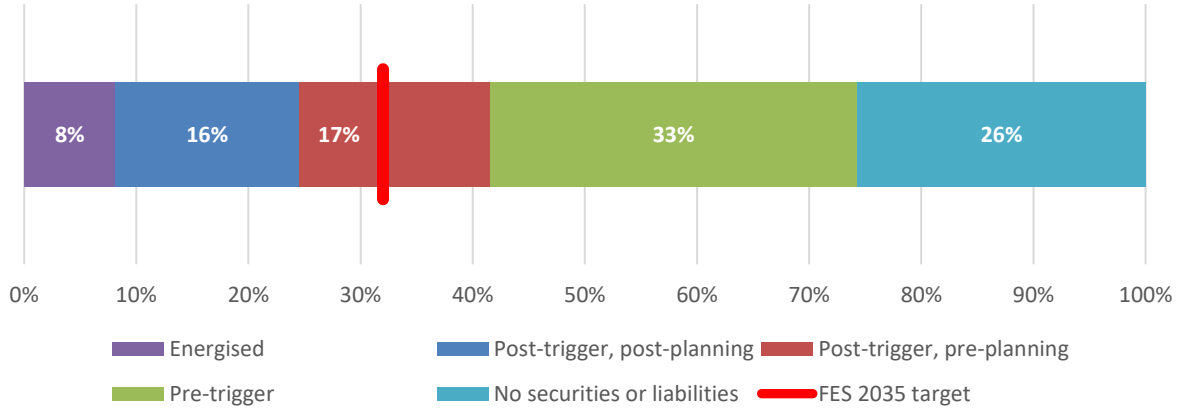
2.16. To quantify the extent to which projects are 'committed', we can consider their posted securities and assumed liabilities as a proxy. We can presume that projects with low securities and liabilities are more likely to be at early stages of development and are generally more likely to exit the queue. Figure 2 below shows that of all the energised and Gate 2 status BESS projects, 58% have either not passed their trigger date or have otherwise not posted securities or assumed liabilities. A project that passes its trigger date (three years before energisation[16]) becomes liable for the Wider Cancellation Charge, therefore increasing the liabilities it assumes and securities it must post. Only 16% of the total capacity has both passed the trigger date and received planning consents. This suggests that a large number of BESS projects could be in the early stages of development.

the time it was difficult to forecast the exact amount of oversubscription.

[15] This could be as much as 9GW of BESS capacity being converted into data centre load capacity. *Ofgem,* 'Consultation: Curate – Demand Connections Reform,' p.14. See: Proposed-data-centre-connection-reforms-curate-consultation-document.pdf

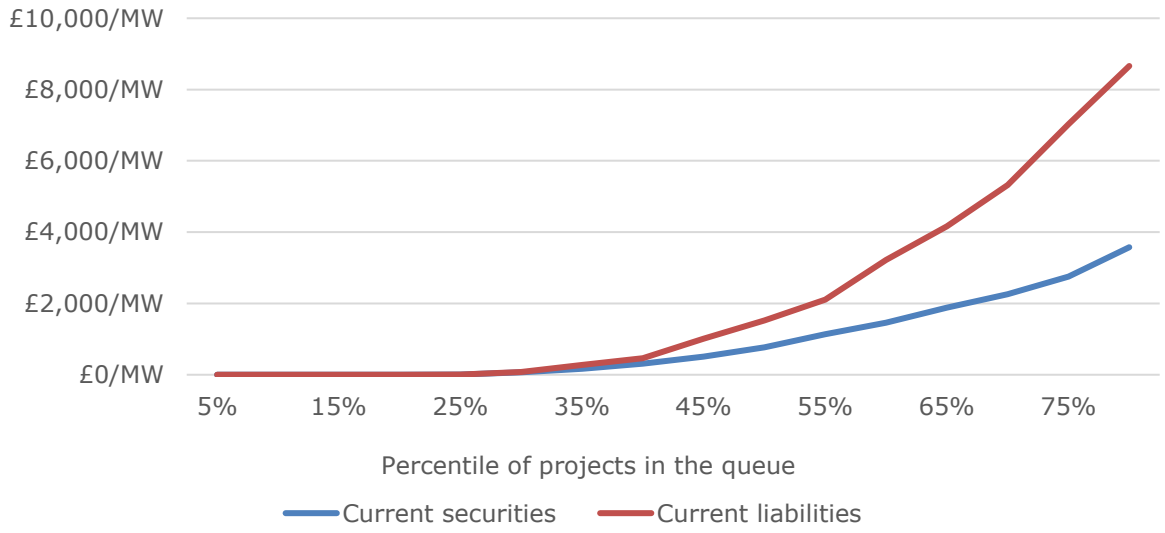
[16] The trigger date is generally 1 April three financial years ahead of project energisation. See: CUSC Section 15 - User Commitment Methodology v1.13 (21 January 2026) (1).pdf

Figure 2: Development stage for BESS projects (Gate 2 status and energised)[17]



2.17. Figure 3 below shows the current liabilities and securities each project has posted, organised by percentile. This illustrates that 50% of projects have posted less than £800/MW as securities and have taken on less than £1,500/MW in total liabilities. By comparison, projects that are being commissioned in 2027, to which all securities and liabilities are presumably applicable, have posted £5,600/MW in securities and £12,200/MW in liabilities on average.

Figure 3: Current securities and liabilities posted in the queue, by percentile

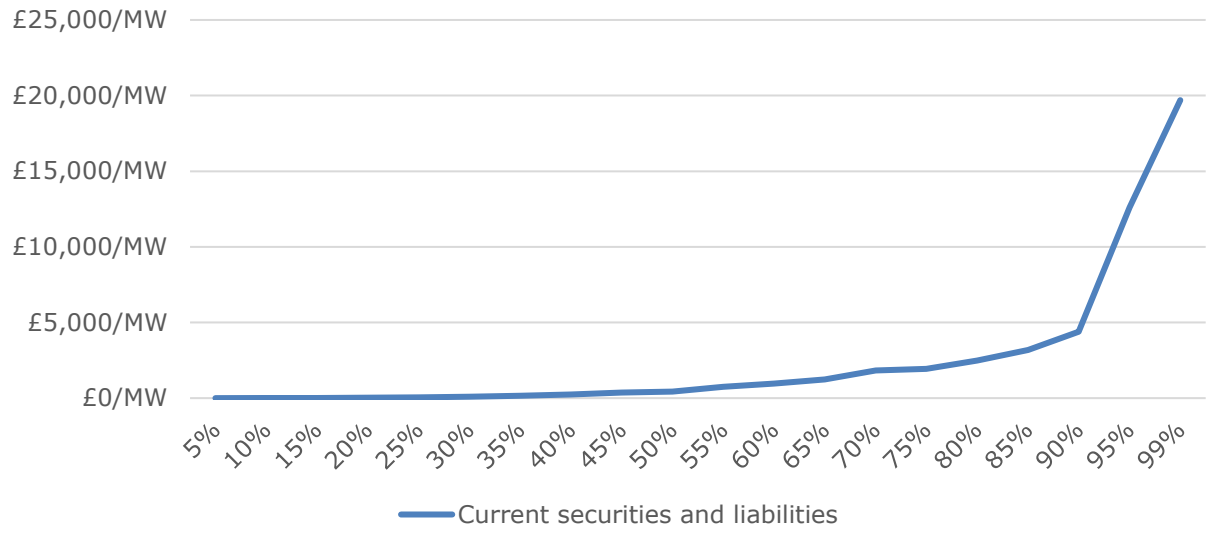


Note: To provide a clearer view of the lower percentile values on the same scale, we have removed the top 20 percentiles.

[17] 'Post planning' here means projects received planning consents.

2.18. Pre-trigger projects have particularly low current securities and liabilities. Figure 4 below shows the same information as Figure 3 above, however only including data from pre-trigger projects. Fewer than 25% have posted securities and assumed liabilities of more than £2,000/MW, and fewer than 10% have posted more than £5,000/MW.

Figure 4: Current securities and liabilities posted by pre-trigger projects, by percentile



2.19. It is likely that market forces will eventually force out many of these, as well as more active projects from the queue. BESS markets can quickly become saturated as many systems chase the same arbitrage opportunities. This competition leads to price differentials and arbitrage profits dropping rapidly to zero (BESS's assumed marginal cost of supply). Market saturation can arrive quickly but can often take a long time to clear.[18] Most market forecasters expect that less than 25GW of BESS would be required for the Great British market to become saturated,[19] beyond which even otherwise committed projects would be incentivised to exit the queue rather than progress their investments. While some additional projects with locational or other advantages may remain profitable despite a market saturated in aggregate, we consider this unlikely to be true for the majority of projects.

[18] Daniel Trueman, 'The Hidden Idle Asset Trap: A New Era of BESS Optimization in Europe,' *Power*, 1 April 2026.
[19] CMP470 Final Modification Report, p.8.

Rationale for intervention

2.20. Although this issue will likely be corrected by market forces eventually, having an oversubscription of BESS capacity in the connection queue, even temporarily, imposes costs on consumers and the electricity system. Critically, BESS developers are not currently incentivised to take these costs into consideration when determining whether or not to accept an offer and, on an ongoing basis thereafter, remain in the queue. Because these costs are not internalised, this could result in inefficiency, the cost of which is ultimately borne by energy consumers. CMP470 is therefore intended to ensure that developer decision points about project viability and investibility occur early enough in the connections process to facilitate more efficient network planning and investment decisions.

2.21. There are two main costs to the wider system caused by projects exiting later rather than sooner, which developers are not incentivised to consider:

- Network planning and build may be inefficient.
- TO resources could otherwise be directed towards connecting other technologies.

Inefficient network planning and build

2.22. TOs are required to develop transmission network plans, invest, and build on the basis that all Gate 2 status projects will connect. If a significant number of these projects subsequently exit the queue, the network may be built to accommodate capacity that is no longer required, resulting in unnecessary costs for consumers. Conversely, because BESS can sometimes act as a substitute for transmission build, parts of the transmission system could be under-built – causing system security and electricity supply risks when Gate 2 status projects ultimately exit the queue.

2.23. The Cancellation Charge includes a Wider Cancellation Charge, which approximates the cost of investing in capacity increases of shared network infrastructure. The Wider Cancellation Charge is calculated based on a Zonal Unit Amount, which differs depending on the zone in which a project connects. In simple terms, the Zonal Unit Amount allocates the expected new transmission capex amongst the expected new generation in that zone.[20]

[20] *NESO,* 'CUSC, Section 15: User Commitment Methodology,' January 2026. See: CUSC Section 15 -

2.24. However, the Connections regime has limitations on how much network inefficiency risk is actually allocated to developers. Firstly, projects only assume the Wider Cancellation Charge liability after their trigger date and only incrementally.[21] However, the planning and construction of transmission infrastructure often starts well before a project's trigger date. As a result, projects exiting the queue can cause network inefficiency risks before they are ever liable for the Wider Cancellation Charge. TOs have noted that the earlier a project exits, the lower the network inefficiency risk. Early exits allow TOs to redesign transmission network infrastructure and scale down construction. Secondly, the Zonal Unit Amounts are calculated to share half of the network inefficiency risk with consumers.

2.25. Because of these measures, developers are not liable for the network inefficiency risks they cause if they exit the queue before their trigger date, and only partially liable if they exit the queue after their trigger date. Consumers ultimately take on the liabilities that are not assumed by the developers, through increases in transmission charges for which they do not see a commensurate benefit.

2.26. Critically, because developers are not fully liable for network inefficiency risks, they are not incentivised to consider removing their projects from the queue early, before these risks increase substantially. Instead, developers can keep their projects in the queue, increasing the network inefficiency risk borne by consumers, at no cost to themselves.

2.27. These measures are normally justified for a few reasons. Firstly, if a project exits the queue and provides spare capacity in the transmission system, that spare capacity may eventually be taken up by a different project, reducing the net cost on consumers in the long-run. Secondly, there may be other benefits to consumers from 'spare' capacity, as the infrastructure involved can also help to reduce constraints and system losses. Finally, assigning the full network inefficiency risk to developers may cause financeability issues for critical projects required to reduce electricity costs and reach Net Zero.

2.28. However, the justifications for the risk sharing measures weaken significantly in the context of a large oversubscription in a particular technology. The more 'spare' capacity created by exiting projects, the higher the risk that new projects will not be

User Commitment Methodology v1.13 (21 January 2026) (1).pdf

[21] In the first year after the trigger date, a project is liable for 25% of the Wider Cancellation Charge, and in each year that increases by 25% to 100% in the connection year.

able to fill that capacity, especially if this happens close to energisation. Additionally, there are likely diminishing marginal benefits from constraint relief and system loss reductions when there is a significant amount of additional spare capacity. Lastly, if there are many developers interested in developing projects in a technology, there is no need to improve projects' financeability at cost to consumers. Thus, in the context of a significant overcapacity in a particular technology, developers should assume the full network inefficiency risk caused by the exit of their projects.

2.29. We can estimate the network inefficiency risk by adjusting the Wider Cancellation Charge to remove the consumer risk sharing measure and by applying it as soon as a project receives a Gate 2 offer. The average Zonal Unit Amount across GB is currently £2,900/MW.[22] Removing the 50/50 risk sharing measure, this value doubles to £5,800/MW. Multiplying £5,800/MW by the total MWs in the queue that have not already incurred a full Wider Cancellation Charge liability returns a total outstanding potential negative externality of £460 million.

2.30. We note that there are a few reasons why this calculation may not fully quantify the inefficient network risk. Firstly, there is a significant amount of variation in the Zonal Unit Amount, and thus on how much network inefficiency risk each project would cause. Secondly, this does not consider the risk to system security and electricity supply if a cancelled BESS project would have otherwise acted as a substitute for additional transmission infrastructure not built. Thirdly, it does not account for the cost of inefficient second-order decision-making based on uncertain network plans by third parties (for example, developers of other technologies). As such, we expect the true cost of the externality to be higher than £5,800/MW.

Missing the opportunity to reallocate resources towards developing other projects

2.31. In principle, if a BESS project exited the queue earlier, TOs could reallocate scarce time and resources they would have spent on that project to connect projects of other technologies, or to more committed and beneficial BESS projects. TOs' resources are often limited in various ways, including from skilled staff shortages and long purchase order waiting lists for key components. Reallocation could result in earlier connection dates being offered to other generation projects. If TOs can

[22] This value is based on a simple average of the Zonal Unit Amounts listed against each zone, here: 2024-25 Wider Cancellation Charge Statement.pdf. We do not currently have access to project-level data that could enable us to calculate a more accurate weighted average Zonal Unit Amount.

reallocate resources to connect other generation projects quicker, consumers may benefit from lower bulk electricity prices and Net Zero may be achieved sooner.

2.32. TOs have indicated through various engagements that the sooner a project exits the connection queue, the better the chance of reallocating the associated assets or their connection by offering earlier connection dates to other projects. We consider there to be a good chance that earlier connection dates could be provided to other generation projects as a result of projects exiting early. This is particularly true at the current moment, while the Gate 2 to Whole Queue (G2tWQ) process is ongoing, where projects' specifications and connection dates are still flexible and may change from the original connection contracts.

2.33. We don't have evidence to quantify the extent to which project developers would be able to take up an earlier connection date offer. Generation projects are generally scheduled over several years and capacity across scarce supply chains are contracted well in advance. It is possible that some of the advancement offers may therefore not ultimately be taken up. However, it remains true that the ability to offer advancements is an enabler for system efficiencies, which is still beneficial in itself to consumers and Net Zero goals.

2.34. The probability that earlier connection dates can be offered, that developers can take up an earlier connection date, and that earlier development would have a material positive impact on customers is dependent on the specific circumstances of each case. It is unlikely that this complex potential benefit could be calculated on aggregate with much accuracy. Accordingly, we consider this cost on a qualitative basis in our decision-making.

How solving this problem aligns with Ofgem's statutory duties

2.35. Considering the costs caused by the BESS oversubscription issue, resolving this issue should support outcomes aligned with Ofgem's statutory duties through:

- Lowering bills by avoiding inefficient investment in the transmission system. This aligns with Ofgem's principal duty of protecting the interests of existing and future consumers.
- Removing a potential barrier to the delivery of BESS and other low-carbon technologies in line with the CP30 Action Plan. This aligns with Ofgem's duty to protect consumers by helping the UK to achieve Net Zero.

3. Proposed OTCF options

Section summary

The Original Proposal and all six WACMs would introduce a floor on the securities or liabilities required from projects of an oversubscribed technology. The floor is activated where capacity exceeds the relevant government target by more than 50% and deactivates once it falls below 25%.

The floor begins at a starting value and escalates at each six-monthly review while the mechanism remains activated, up to a maximum value. Projects already holding securities above the floor are unaffected.

The options differ across four parameters: the level of the OTCF, when securities are returned, whether the floor applies to securities or to liabilities, and the treatment of co-located projects.

3.1. The Original Proposal and the WACMs all propose an OTCF, which introduces a floor on the securities or liabilities required from projects with oversubscribed technologies.

3.2. In the Original Proposal and all WACMs, NESO compares the total capacity for each technology against the relevant government connection capacity target for that technology every six months. The relevant government target would currently be CP30, but in the future would be the relevant enduring strategic plan. The OTCF would be activated for a particular technology if there is an oversubscription compared to the relevant government target of more than 50%. Once activated, the OTCF operates as a minimum securities floor. The floor starts at some starting value and in each following 6-monthly review that the OTCF remains activated, the OTCF increases by some increment, up to a maximum. The mechanism only deactivates once the oversubscription falls below 25%. The floor is applied on a £/MW basis through existing User Commitment arrangements. Projects with securities below the OTCF level must provide additional security to meet the floor, while projects already above the OTCF threshold are unaffected.

3.3. The Original Proposal and each WACM vary according to their proposed:

- **Timing**: when the OTCF is returned.
- **Application Method**: Whether it is an increase in the liability or security.
- **OTCF level**: The value of incremental increases, the OTCF maximum, and the interaction with projects' previous maximum security requirements.
- **Exemptions for co-located Projects**.

Decision options at hand

3.4. **The Original Proposal** is a floor in the securities a project has to post. Once the OTCF is activated, it applies a starting value of £3,000/MW, which if the OTCF is not deactivated, rises to £5,000/MW after six months and thereafter increases by £5,000/MW every six months, up to a maximum of £25,000/MW. The Original Proposal returns the OTCF to projects once they have been energised, and it provides an exemption to co-located projects that meet certain criteria.[23]

3.5. **WACM1** differs from the Original Proposal in the treatment of the OTCF maximum. In WACM 1, a project's additional security requirement from CMP470 would be limited to the maximum amount it would have been required to pay in securities at any point prior to project energisation in the absence of CMP470.

3.6. **WACM2** differs from the Original Proposal only in when a project is returned its security. Under this option, the security is returned once a project has met all User Progression Milestones up to and including Milestone 8: Start of project construction.

3.7. **WACM3** differs from the Original Proposal in three respects. First, the OTCF is applied as a floor on project liabilities rather than on securities. Second, the OTCF values are lower, starting at £2,000/MW and escalating in £2,000/MW increments to a maximum of £8,000/MW. Third, as with WACM2, the OTCF no longer applies once a project achieves all User Progression Milestones through to Milestone 8.

3.8. **WACM4** differs from the Original Proposal only in its treatment of co-located projects. The exemptions available to co-located projects under the Original Proposal

[23] See the Consultation Document and the FMR for more details.

are removed, meaning that all projects containing an oversubscribed technology become subject to the OTCF.

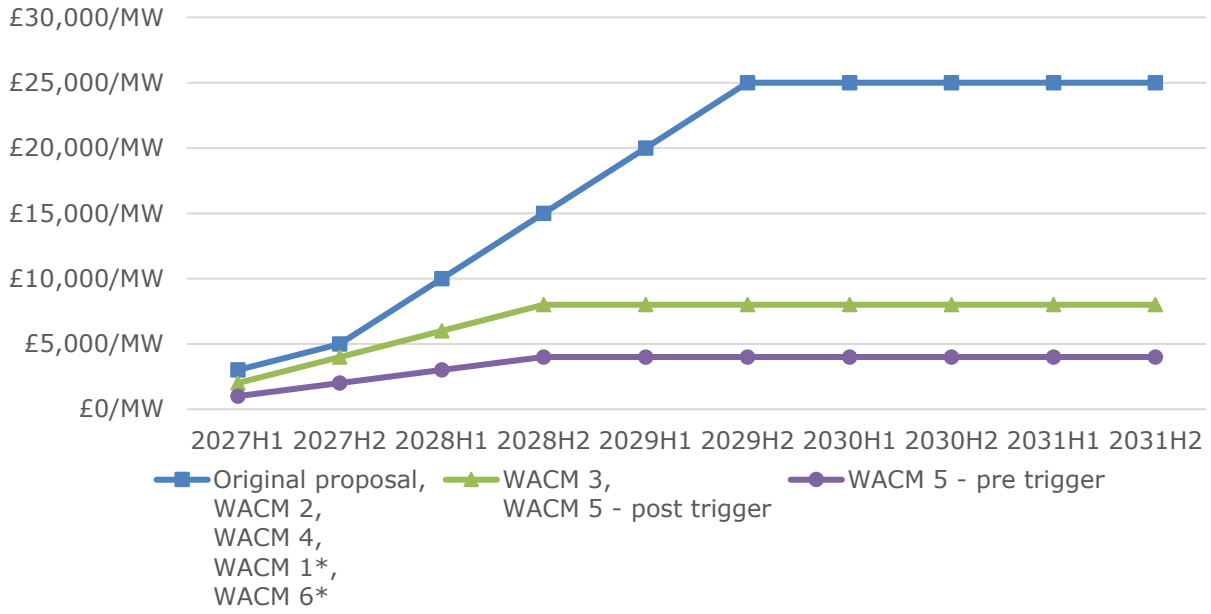
3.9. **WACM5** differs from the Original Proposal in three respects. First, it introduces separate OTCF values depending on whether a project has or has not passed its trigger date. Projects that have not passed their trigger dates are subject to an OTCF starting at £1,000/MW and rising in £1,000/MW increments to a maximum of £4,000/MW, while projects that have passed their trigger dates face an OTCF starting at £2,000/MW and rising in £2,000/MW increments to a maximum of £8,000/MW. Second, the OTCF is limited to the maximum security exposure the project would otherwise have faced under existing arrangements, as is the case with WACM1. Third, as with WACM2, the OTCF no longer applies once a project achieves all User Progression Milestones through to Milestone 8.

3.10. **WACM6** combines the changes proposed under WACM1 and WACM4. Relative to the Original Proposal, it removes the co-location exemptions so that all relevant co-located projects are within scope and limits the OTCF to the maximum security exposure the project would otherwise have faced under existing arrangements.

3.11. Ofgem is also able to choose the baseline option by **rejecting the Original Proposal and the WACMs**. This represents the counterfactual option, against which the impacts of the other options can be assessed. We assume the counterfactual is a scenario where additional market interventions are not progressed and the oversubscription issue persists.

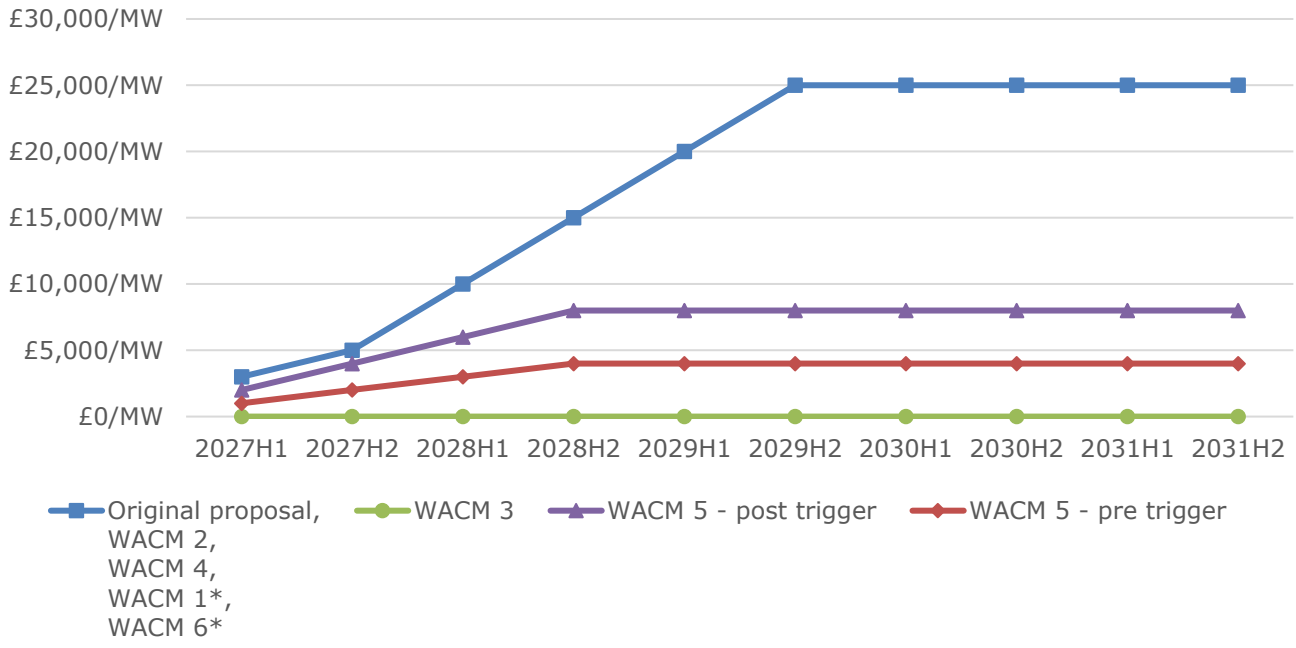
3.12. Figure 5 and Figure 6 below show how the liabilities and securities would increase over time in the Original Proposal and the WACMs.

Figure 5: Increase in a project's minimum liabilities, assuming the OTCF remains activated across the whole period



** Indicates options where a project's security requirement is the lower of the OTCF value and a project's own maximum expected securities under existing arrangements.*

Figure 6: Increase in a project's minimum securities, assuming the OTCF remains activated across the whole period



** Indicates options where a project's security requirement is the lower of the OTCF value and a project's own maximum expected securities under existing arrangements.*

4. Benefits and risks of an OTCF

Section summary

An OTCF would benefit consumers by encouraging lower-commitment projects to leave the queue earlier, reducing inefficient network build and allowing Transmission Owner resources to be redirected towards other projects.

These benefits must be weighed against three principal risks: over-correction leading to a temporary shortfall against the capacity target, selection of projects on the basis of access to liquidity rather than underlying value, and reduced competition in the affected technology.

The scale of both the benefits and the risks depend on how many projects respond to the fee and when. That cannot be predicted with confidence with the data currently available.

4.1. An OTCF proposes to deliver benefits by reducing the costs to the wider system created by oversubscription in the connection queue. However, these benefits must also be considered relative to the potential risks caused by an OTCF.

Benefits

4.2. As detailed in the 'Rationale for intervention' section above, the benefits generated by an OTCF include reducing network development inefficiency and enabling the reallocation of resources to other projects. For any project that exits the queue sooner than the baseline scenario, these benefits will be present to varying degrees. We conceptually divide two groups according to their benefits and potential risks.

4.3. The first group are the lower commitment projects. These projects are more likely to eventually exit the queue as they have progressed less in their development and have invested less in progressing their projects. While it is not practical to precisely characterise them or measure how many there are in the queue, it appears credible that many current BESS projects fall under this category. We expect that even a relatively small increase in securities or liabilities imposed quickly would result in some of these projects leaving the queue sooner than in the baseline scenario.

4.4. The second group are the more active projects, which have progressed further in developing their projects, invested more, and have identified a strong economic case for going ahead. The OTCF aims to force the queue capacity in oversubscribed technologies closer to the relevant government target, which likely includes removing some of these more active projects as well. The benefits of having these projects exit the queue sooner than in the baseline scenario are similar, but removing these projects also involves greater risks. We see three specific risks arising from removing more active projects from the connection queue:

- Risk of over-correcting.
- Risk that liquidity constraints restrict optimal projects.
- Risk of competition impacts.

Risk of over-correcting

4.5. There is a risk that OTCF forces a reduction in the capacity of a particular oversubscribed technology below the relevant government target. The design of the OTCF should be calibrated to minimise this risk as far as possible, while also ensuring that the benefits of reducing oversubscription are realised. Broadly, we expect the cost of having too much capacity in the queue is likely lower than the cost of not having enough capacity ultimately connected. Not having enough capacity connected will lead to higher energy costs for consumers and will delay the achievement of Net Zero. While new projects may enter a newly under-subscribed queue and mitigate this risk, new projects' earliest connection dates are likely to be later than those of the projects already in the queue.

4.6. What makes managing this risk more difficult is that it is impossible to precisely quantify how many projects will exit as a result of an OTCF, and how many will exit as a result of natural attrition. Projects will naturally exit as they are hit with unavoidable barriers such as financing squeezes, supply chain issues, and environmental consenting barriers. If the OTCF were to reduce projects to the proposed 25% OTCF deactivation level, and subsequently a few projects were to hit these or similar barriers, there could, in theory, be a risk of not meeting the relevant target.

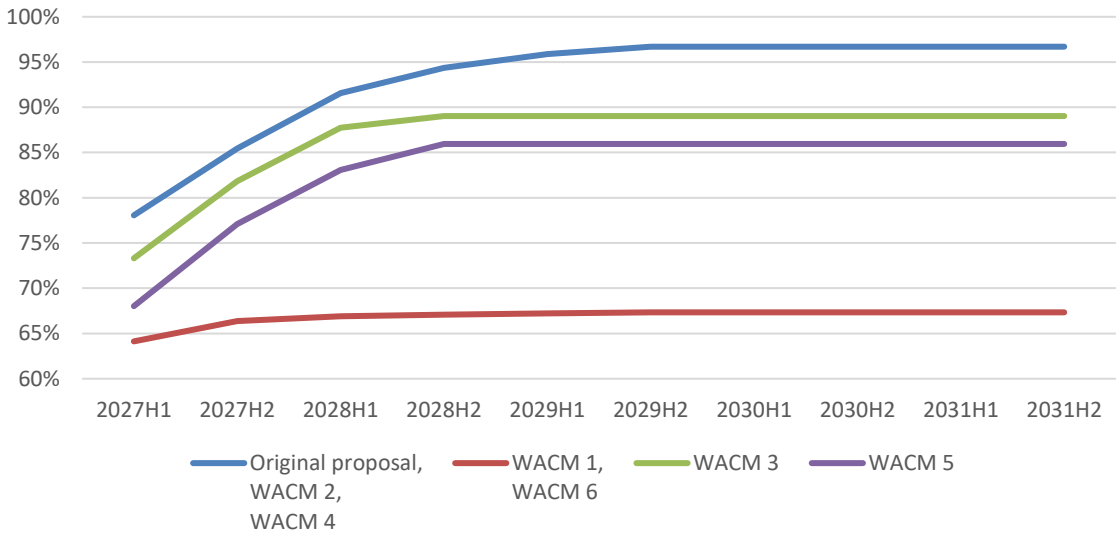
4.7. However, our analysis suggests that at the 25% OTCF deactivation level, these risks may not be very high. Between 2023 and 2025, 72 energy storage projects exited the connection queue or changed their technology classification – a 6.7% reduction

per year. During this period, earlier-stage projects were more likely to exit the queue. 7.4% of projects at the 'scoping' or 'awaiting consents' stages dropped out each year, compared to 3% of projects with approved consents. No projects at the construction stage exited the queue. This attrition rate suggests that the 25% deactivation level may be sufficient to avoid an undersubscription. However, there are limitations to using this historic data as a predictor of the post-OTCF queue. It is possible that during this period, some projects hit unavoidable barriers but nonetheless did not exit the queue because they did not have financial incentives to do so. This may lead to an underestimation of the natural exit rate.

4.8. Additionally, the CP30 values, economic dispatch modelling, and future government targets are all inherently uncertain forecasts. There is a risk that in the future, the market actually requires more of an oversubscribed technology than was forecast. The more the OTCF reduces oversubscription when it is first applied, the greater the risk that a future increase in the relevant government target leaves the queue materially undersubscribed.

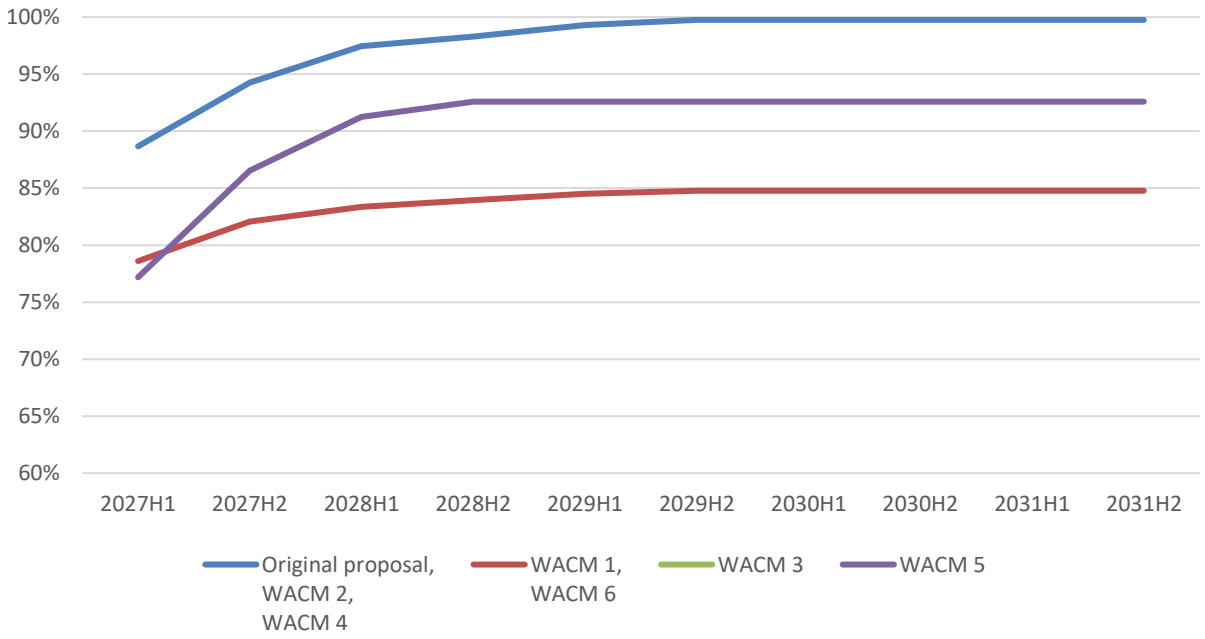
4.9. Predicting exactly how many projects would exit under each OTCF option is impossible given the OTCF mechanism is a complex system where each participant is making decisions based on several orders of game theory thinking. However, we can examine the maximum number of BESS projects that would exit under a given option. Figure 7 and Figure 8 below show the percentage of projects that would see their liabilities and securities increase compared to their current values under the different options. Figure 7 shows that even the starting OTCF values in each option are expected to increase liabilities for a majority of projects, from 64% in WACM1 and WACM6 to 78% in the Original Proposal, WACM2, and WACM4 (the 'high intervention proposals'). At the £25,000/MW level under the high intervention proposals, 97% of projects will see increases in liabilities.

Figure 7: Percentage of Gate 2 status BESS projects that would see liability increases



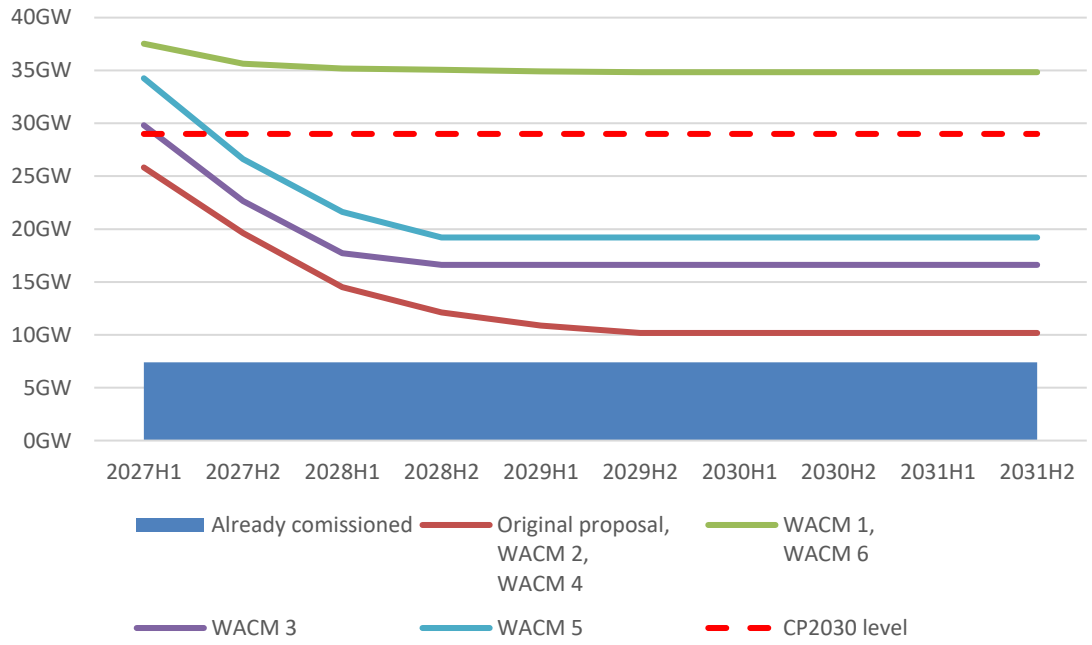
4.10. The effect is even more stark when considering securities, where the percentage of projects that would see increases in securities from the OTCF under the high intervention proposals increases from 89% initially to 99.8% at the OTCF maximum. WACM3 has no increase in securities, so is not displayed.

Figure 8: Percentage of Gate 2 status BESS projects that would see security increases



4.11. Figure 9 below shows the effect on the queue if we were to assume that all projects whose liabilities increased would exit the queue. Under this assumption, the Original Proposal and the other high-intervention options would immediately see BESS capacity in the queue fall below the CP30 level. Only under WACM1 and WACM6 would the OTCF's starting level not reduce the queue to below the 25% deactivation threshold.

Figure 9: BESS capacity in the queue assuming all projects exit when their liabilities increase and the OTCF does not deactivate



4.12. While the assumptions underlying Figure 9 are unrealistic, it shows there is some risk that the high intervention proposals cause BESS capacity to fall below the CP30 levels as soon as it is activated. Under the high-intervention options, if more than 72% of projects facing liabilities increases exit the queue at the OTCF's starting value, the remaining capacity in the queue will fall below the 50% OTCF activation level. To fall below the 25% OTCF deactivation level, more than 83% of affected projects must exit. While we consider it unlikely that more than 83% of projects exit after facing initial liability increases, the extreme scenario modelled above does at least illustrate the possibility that stronger interventions could cause an unintended overcorrection.

Risk that liquidity constraints restrict optimal projects

4.13. In trying to reduce oversubscription, the OTCF is essentially getting projects to compete on liquidity. Projects that can most easily access capital (i.e. are most 'liquid') are more likely to go ahead, so this is a good metric for selecting viable projects. However, access to liquidity is not the only metric that determines how likely a project will be to go ahead and, importantly, how beneficial that project is for consumers once it is built. Projects provide benefits to consumers and the electricity system relative to how quickly they can be energised, how optimally they are located, how cost efficient they are, and how optimal they are with respect to battery duration and technical performance. There is no guarantee that projects selected purely on the basis of liquidity will provide optimal system-wide benefits, or drive lower costs for consumers through more efficient network design.

4.14. One particular risk is that BESS projects are not optimally distributed locationally. Projects with greater access to liquidity may be focused in areas where there are larger arbitrage opportunities. Smaller BESS projects with lower access to liquidity may be focused around arbitrage opportunities in more dispersed zones, that are less lucrative, but nonetheless do provide net benefits. There is a risk that sorting projects by liquidity will lead to locational clumping, where other opportunities are missed. However, without more detailed locational data on the current queue stack, it is unlikely that we will be able to quantify this risk.

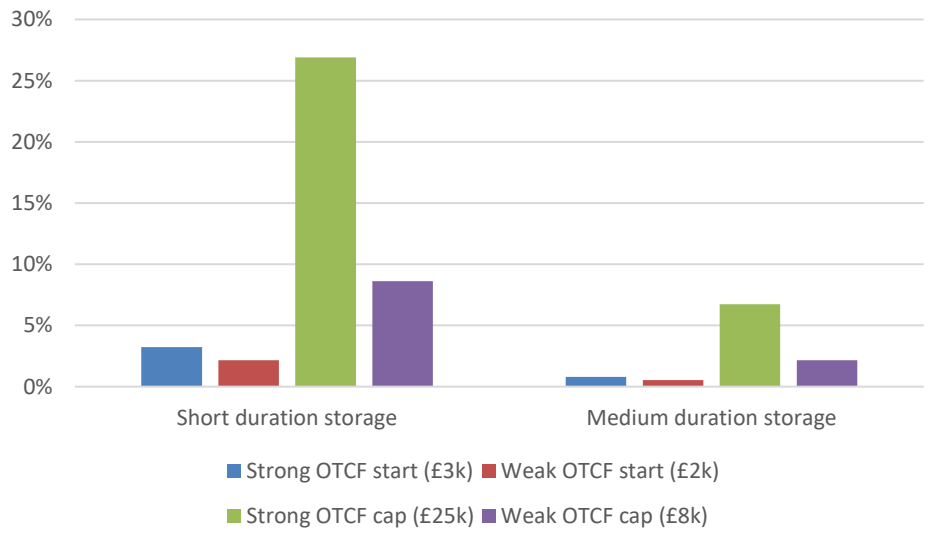
4.15. This risk is partly mitigated by the OTCF maximum. The OTCF maximum means that the extent to which projects compete purely on liquidity requirements is inherently limited. As long as projects are able to raise liquidity to meet the OTCF maximum, they will have the opportunity to stay in the queue, even if they don't have more liquidity than other projects. As such, the level of the OTCF maximum reduces the risk that liquidity becomes overly determinative.

4.16. Analysing the proportion of total project capex tied up in a security can provide an insight into the burden of OTCF liquidity requirements. Figure 10 compares the OTCF to two types of projects, assuming a capex cost of £92/kWh.[24] Short duration projects geared towards ancillary services have greater connection capacities as a proportion of total capex costs. For these projects, the high intervention proposals could account for more than 25% of total capex costs. The OTCF maximum under

[24] *Ember,* 'How Cheap is Battery Storage,' December 2025. See: How-cheap-is-battery-storage.pdf

the high intervention proposals also has a significant impact on medium duration (four hour) BESS, which could be more than 7% of total project capex.

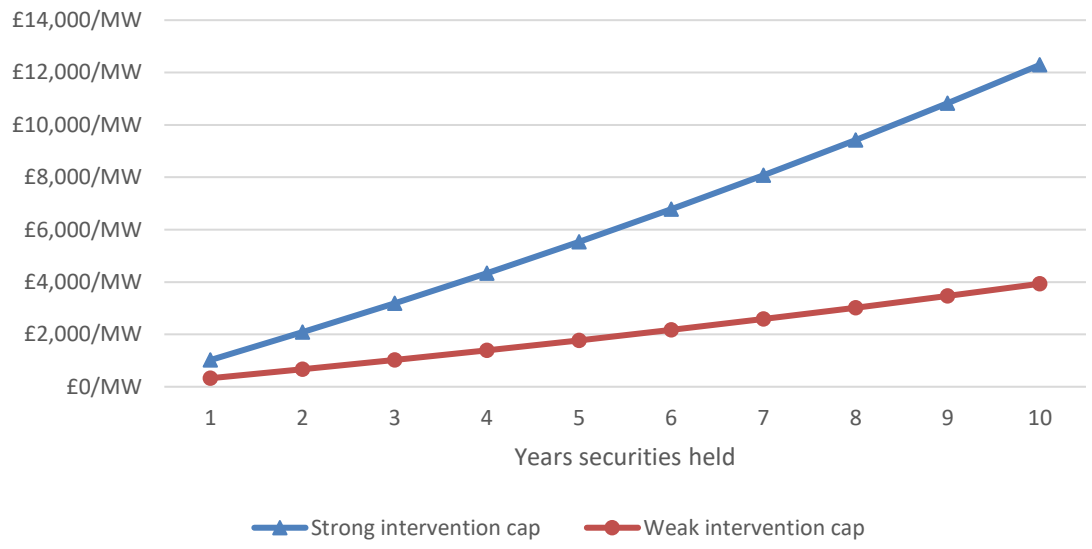
Figure 10: Impact of different OTCF values as a percentage of BESS project capex



4.17. The cost of locking up this capital also incurs an interest cost on projects. The present value cost of providing a security equal to the options' OTCF maximum is shown in Figure 11 below. Assuming, for example, that the OTCF affects all projects in the queue for an average of 4 years, and assuming all projects remain in the queue, the interest cost to developers would be approximately £320 million at the higher OTCF maximum of £25,000/MW and £130 million in the lower OTCF maximum of £8,000/MW. These assumptions are ultimately unrealistic but show the maximum cost on developers that the OTCF could impose.

4.18. We note this risk could also be mitigated by setting the OTCF as a liability floor, as proposed in WACM3, rather than a securities floor. Under a liability floor, developers would still be liable for the costs they impose on the system, but would not have to incur the interest costs associated with securing that liability. This would potentially free up a significant amount of capital for developers to use in the construction of these or other projects in the electricity system.

Figure 11: Present value interest cost of the OTCF maximum, in real terms[25]



Risk of competition impacts

4.19. The liquidity requirement in the OTCF could also have impacts on competition in oversubscribed technology markets. Introducing a liquidity requirement may favour more established developers with large balance sheets that can more easily raise capital, compared to smaller developers. This could have a negative impact on the level of competition in the market by causing smaller providers to exit the market due to the liquidity requirements, rather the benefits a project can provide to consumers.

4.20. The FMR notes the CMP470 proposers' view that the introduction of an OTCF could better facilitate competition between developers, by removing less viable projects from the queue. It argues this would enhance the competition among projects remaining the queue, by providing better information on which projects remained viable.

4.21. Our view is that while a reduction in projects will not improve competition, the negative impacts on competition are likely to be limited. As noted above in the 'Risk

[25] Using an assumed real interest rate on BBB rated corporate utility bonds of 4.08% based on FTSE Russel Data. Available at: google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiP0uzG6JiWAxXITkEAHe8ICgUQFnoECB0QAQ&url=https%3A%2F%2Fresearch.ftserussell.com%2FAnalytics%2FFactSheets%2FHome%2FDownloadSingleIssue%3FissueName%3DUKBIG%26isManual%3DTrue&usg=AOvVaw2ksOZcXin-2clQbQRv4laT&opi=89978449

that liquidity constraints restrict optimal projects' section, the total cost of the maximum OTCF is likely to represent a relatively small proportion of total project costs for most projects in the queue, so is unlikely to cause significant distortion to competition.

5. Approaches to determining the level of OTCF

Section summary

There are two broad approaches to setting the level of an OTCF: internalising the direct costs of oversubscription only, or also taking account of wider considerations approach.

We consider the direct-costs benchmark is likely to understate the total externality, and there are further reasons to act more quickly than strict internalisation would imply.

Neither the additional benefits nor the additional risks of a stronger intervention can be robustly quantified. Our initial view, reached on judgement, is that the wider considerations approach is preferable.

5.1. Broadly, we consider there are two main economic approaches to determining the level of any OTCF that would be consistent with oversubscribed capacity reducing efficiently in line with the relevant government target. These are:

- Internalisation of direct costs only approach.
- Wider considerations approach.

Internalisation of direct costs only approach

5.2. The costs imposed by persistent oversubscriptions are not fully borne by the developers generating them. As a result, developers may have limited incentives to make viability decisions at the time most relevant for network planning and investment. In principle therefore, if we could calculate the exact size of these costs, charging them to developers would lead to more efficient network design and investment. In the terminology of economic theory, the costs imposed by oversubscription on consumers and the electricity system constitute negative externalities, and economic theory holds that if developers can be charged at a level equal to these ('internalising the externalities'), the market will find an equilibrium outcome.

5.3. Although this approach might result in a queue capacity higher than the relevant government target in the short-to-medium term, that would be optimal, according to this framework. For example, projects might remain in the queue after the OTCF has been introduced but later exit, because developers are unsure of their costs and feasibility, and they assess that it is worth incurring cost equal to the negative externality to maintain their queue position and 'learn' about profitability over time. This is true, even if oversubscription is expected in aggregate in the market and they know there is a risk that they will not proceed. But if so, as consumers will have been insulated from the costs of these projects not leaving sooner, it will have been an efficient use of resources for them to remain.

5.4. However, we do not consider that directly quantifiable costs alone fully capture the impacts associated with persistent oversubscription. In particular, this approach does not fully reflect the value of improving network planning certainty or bringing forward viability decisions during the period when key network planning and investment decisions are being made.

5.5. As discussed in Section 2.28, we estimate that the directly quantifiable network inefficiency externality associated with current oversubscription is approximately £5,800/MW. This therefore provides a useful benchmark for the level of any OTCF.

Wider considerations approach

5.6. It is our assessment, however, that the internalisation of direct costs only approach would pass over a range of important wider considerations and externality costs. We therefore place weight not only on directly quantifiable costs, but also on wider considerations including queue credibility, planning certainty, efficient deployment of TO and NESO resources, and the risk that network planning assumptions are based on projects that ultimately do not connect. Accordingly, we expect the total wider externalities to be higher than £5,800/MW.

5.7. Furthermore, even if all costs could be measured and internalised, there are wider reasons why it may be better in practice to 'kick-start' the reduction in BESS capacity more quickly, for example by increasing the OTCF beyond £5,800/MW or signalling to the market that this will occur in due course unless oversubscription is resolved. There are at least two main reasons why stronger intervention could provide greater benefits than the cost internalisation approach:

- Developers may not adjust quickly or fully enough to financial signals.
- Concerns for broader government objectives.

5.8. It is likely, we consider, that some developers will react only gradually or imperfectly to market signals compared to what is assumed in basic economic theory. This could happen, for example, because developers have non-economic incentives, or display inertia when faced with complex incentives. Whilst decision-making at the final investment decision stage may focus mainly on profitability, potentially slow adjustment to this could delay reaching the efficient equilibrium. This would be an efficiency loss, as developers would have tied up capital that could have been used productively elsewhere in the economy. A stronger intervention may be justified to force improved risk analysis and decision-making sooner.

5.9. Further, uncertainty in future connections may affect larger-scale system planning processes. Accurate connection forecasts are critical to important sector planning processes, including the SSEP, the CSNP, and other DESNZ policy developments. Uncertainty caused by oversubscription could propagate uncertainties in other parts of the sector too. These uncertainties could in turn cause significant additional costs for consumers, although these are not directly measurable.

5.10. On the other hand, the wider considerations approach increases the risk of overcorrection, leading to a temporary undersupply of an oversubscribed technology. It also increases the risk that the set of projects eventually energised are selected on the basis of liquidity and not on their overall benefits to consumers. Lastly, stronger approaches increase the risk of a more concentrated market in the oversubscribed technology and reduced competition.

5.11. As the additional benefits and risks of choosing the wider considerations approach over a simpler 'direct costs only' approach are prohibitively difficult to quantify, we consider that a determination between them should be made based on judgement taking account of a range of evidence and qualitative argument available.

5.12. On this basis, we consider that the additional benefits of the wider approach, particularly around system planning, outweigh the potential additional risks. System planning affects the whole electricity system and adding uncertainty to this process could have far reaching effects, as would delaying the connection of other projects critical to the UK's progress towards Net Zero. Conversely, the potential risks to a

particular oversubscribed sector are more identifiable and concrete and therefore easier to resolve if they materialise.

6. Determining other OTCF parameters

Section summary

Beyond the general level of the OTCF, the options differ across four parameters: when securities are returned, whether the floor applies to securities or to liabilities, the treatment of co-located projects, and whether the OTCF should be limited to a project's existing maximum security exposure.

On balance we prefer return at energisation, which removes the risk of projects satisfying Milestone 8 on a technicality before exiting, at a modest interest cost to developers. We do not consider the choice between a security and a liability floor to be material at this stage. Limiting the OTCF at a project's existing maximum security exposure does not align with either approach to setting the OTCF level, as a significant share of capacity would face no additional requirement. Retaining the co-location exemption preserves the locational signal.

6.1. Besides the approach for determining the level of an OTCF, there are four parameters across which the Original Proposal and WACMs differ. These are:

- **Timing**: When the OTCF is returned.
- **Application Method**: Whether it is an increase in the liability or security.
- **Interaction with existing maximum security exposure:** Whether the OTCF is limited by the maximum securities it would have otherwise faced in the baseline scenario.
- **Exemptions for co-located Projects**.

6.2. Table 1 below summarises the qualitative assessment of the preferred option for each parameter where the Original Proposal and WACMs differ.

Table 1: Summary of preferred parameters and alternative options

Parameter	Preferred parameter	Alternative option
Return of OTCF securities	At energisation.	Upon reaching Milestone 8.
Setting the OTCF as a security or liability floor	Either as a security or a liability.	
Interaction with existing maximum security exposure	OTCF security requirements are not limited to a project's existing maximum security exposure.	OTCF security requirements are limited to a project's existing maximum security exposure.
Interaction with co-located projects	Co-located projects are exempted.	Co-located projects are not exempted.

Security return dynamics

6.3. The Original Proposal and WACMs all have the securities (or liabilities) being returned (or cancelled) at the sooner of the deactivation of the OTCF (when oversubscription has reduced to 25% or less) or when a project reaches either Milestone 8 or energisation. To pass Milestone 8, developers must begin construction of their project.[26]

Returning the OTCF when projects reach either energisation or Milestone 8

6.4. There are different costs associated with either returning the OTCF once projects reach energisation or after Milestone 8. Returning securities at energisation means developers incur higher interest costs on their posted securities. As shown in Figure 11, which shows real interest costs, a project whose construction lasts two years would incur approximately an additional £2,000/MW in interest costs after having posted the high-intervention options' OTCF maximum of £25,000/MW. If the same project had posted the low-intervention options' OTCF maximum of £8,000/MW, its additional interest cost would be £700/MW. Assuming a medium duration project's total capex of approximately £375,000/MW, these additional costs are not likely to have a significant impact on projects' investment decisions.

[26] For more details on the requirements to pass the Milestone 8, see: *Ofgem*, 'Decision on Connections Reform Package,' April 2025.

6.5. On the other hand, returning the OTCF once a project reaches Milestone 8 introduces a risk that developers take steps to meet the Milestone 8 requirements on a technicality, then exit the queue. Exiting the queue at these later stages will impose large network inefficiency costs and significantly restricts the probability that TOs can redirect resources to offer earlier connection dates to other projects. The likelihood that developers would be incentivised to leave the queue at Milestones 8 is probably limited, as in most cases we expect projects would incur greater development costs to reach that stage than they would be saving by avoiding the loss of the OTCF security. However, we do not have data or analysis to support this assumption and the Workgroup also noted the inability to determine the likelihood of this occurring. Our analysis notes that between 2023 and 2025, no BESS projects exited the queue after being recorded as being "Under Construction or Commissioning." However, these projects were not subject to the incentives created by the OTCF and as such this provides limited evidence.

6.6. We consider both of these options (returning the OTCF at Milestone 8 or at energisation) to be reasonable. On balance, we find that OTCF return on energisation to be marginally better for consumers. The risk of developers dropping out of the queue after Milestone 8, while likely to be small, would have much larger impact if it occurred than would a relatively small decrease in project liquidity and in interest costs.

Returning the OTCF on deactivation

6.7. We have also considered the costs and benefits of returning securities at OTCF deactivation. We believe this parameter creates a potential issue of developers 'riding out' the OTCF, where projects that would otherwise exit would instead wait in the queue for the deactivation of the OTCF so as not to lose their security.

6.8. As an example, consider a project that has already posted securities for the OTCF and discovers a reason why it is no longer able to proceed. That project has two options: 1) Immediately exit the queue and forfeit the OTCF security, or 2) stay in the queue waiting for the OTCF to deactivate to recover their security and then exit the queue. Under certain circumstances, that project may be incentivised to stay in the queue. If so, this would exacerbate the issue of speculative projects remaining in the queue, rather than resolving it. Further, once the OTCF is deactivated, these projects might then exit, potentially leading to an undersubscription.

6.9. The risk of this behaviour is limited by a few factors. Firstly, projects must meet queue management milestones or risk getting removed from the queue. Projects thinking about riding out the OTCF will have to have strong expectations that the OTCF deactivates before their next milestone, or that meeting their next milestone will cost less than losing their OTCF security. Secondly, there is an opportunity cost and interest cost associated with posting securities, so the project would need to be reasonably sure the expected value of riding out the OTCF is higher than the expected cost. Lastly, because the OTCF is reassessed every 6 months, there is a limited number of opportunities for the OTCF to be deactivated before a project's energisation date.

6.10. To remove the potential for this behaviour, it may be better for the OTCF to only be returned to projects once they reach either Milestone 8 or energisation, rather than upon deactivation of the OTCF. We note that this parameter is not directly present in any of the options. However, we consider it unlikely that this issue is significant enough to warrant selecting the baseline scenario, particularly given the risk of this behaviour is considered low.

Setting the OTCF as a security or liability floor

6.11. Economic theory suggests that costs for the parties could differ slightly depending on whether the OTCF is set as a liability or a security. Securities require developers to tie up capital[27] that could otherwise be deployed to speed up battery construction or in other areas of the economy. Conversely, liabilities would impose a cost on consumers if developers defaulted. In practice though, we consider default risks to be relatively low, given the liabilities generally require parent company guarantees.

6.12. While there are some differences in outcomes, we consider there to be relatively minor. In effect, liabilities and securities would both impose an economic cost on developers, even though the financial flows would occur at different times. Although securities might impose a slightly higher opportunity cost on developers, we do not anticipate a magnitude of difference large enough to make a significant difference to their decision-making. As such, we would expect forward-looking companies to make similar decisions in either option.

[27] Analysis of the time value of money imposed by securities on developers is included in Section 4.17.

6.13. We have considered possible behavioural limitations to this view, including that companies may not be sufficiently forward-looking with respect to liabilities or that SPV managers may in some cases be able to approve security payments without going through the formal risk management processes associated with getting a parent company guarantee. However, given the complexity of potential behaviour and incentives, we do not feel we should distinguish materially between liability and security approaches on this basis, certainly at this stage.

6.14. The only option that proposes the OTCF as a floor in liabilities instead of securities is WACM3.

Interactions with Maximum Cancellation Charge Secured amount

6.15. WACM1, WACM5, and WACM6 set a ceiling on how much a project has to submit in securities upon activation of the OTCF, equal to the lower of the OTCF value and the maximum security a project would face up to energisation in the absence of CMP470. This has the effect of bringing forward in time a higher level of securities that would eventually be due, but of not going beyond that level.

6.16. In not going further, the options are designed to support proportionality in projects' expected Cancellation Charges. Introducing the OTCF in this tailored way has the benefit that it would preserve the locational incentives set out in the Connections Reform Package. Projects located in zones that do not require wider network reinforcement (either with or without the BESS project) are not imposing as large an externality on consumers, and so would not be required to pay as high an OTCF.

6.17. However, we expect that in most cases, projects' maximum expected securities in the absence of an OTCF will be lower than the negative externalities these projects create. This is because the Wider Cancellation Charge, to which securities are aligned, includes the risk sharing arrangement with consumers. As a result, under these options, developers would not face the full impact of their decisions, raising the risk of an outcome that would be materially inefficient. As shown in Figure 8 (see Section 4.9), setting a ceiling for the OTCF at a project's maximum security exposure significantly reduces the number of projects to which the OTCF would force additional securities. At the OTCF maximum, fewer than 70% of capacity would see securities increase in WACM1 and WACM6.

6.18. Setting a ceiling for the OTCF at a project's maximum security exposure thus does not align with either approach to determining the level of the OTCF. It does not align with the approach of internalising the direct costs only, as some costs would not be internalised, for which consumers would remain liable. It does not align with the 'wider considerations' approach as it is ineffective at showing a stronger signal to resolve the oversubscription issue. As a result, we consider these options to have worse outcomes for consumers and the electricity system.

Interaction with co-located projects

6.19. WACM4 and WACM6 remove the co-location exemptions provided by the Original Proposal and all other options. Proponents of removing this exemption give two main reasons. Firstly, that co-located BESS projects contribute equally to oversubscription and should be equally incentivised to exit the queue. Additionally, that the exemption could create incentive for developers to game the system by recording batteries as co-located solely for the purpose of avoiding the OTCF.

6.20. However, maintaining incentives to locate batteries efficiently is, in our view, key to ensure an optimal set of projects going forward. The OTCF without the co-location exemption would remove a key locational signal. Maintaining this locational signal is particularly important under the wider considerations approach, to mitigate the risk that efficient, potentially profitable projects with low levels of liquidity could be crowded out as the fee rises to higher levels under that approach. Also, we consider there is a low likelihood that projects will game co-location. Projects that are not already co-located would find it difficult and costly to vary their applications with network companies and add plans for other technologies. Projects with existing co-location plans are unlikely to remain in the queue just for the purpose of keeping their BESS capacity position. We consider it more likely than not that the costs of progressing their other technologies through the connection milestones are greater than the benefits of the OTCF exemption.

Interaction with Project Commitment Fee (PCF)

6.21. The Original Proposal is designed to operate alongside existing commitment mechanisms, including the PCF, but targets different issues in the queue. The PCF addresses projects' possible lack of progression between Gate 2 acceptance and Milestone 1. In the case of the current BESS oversubscription, we understand that projects have already submitted planning applications (thereby reaching Milestone

1), as this was a requirement to receive protections under the Connections Reform Package's transitional arrangements. The FMR notes that overlap between the mechanisms is expected to be relatively limited. As such, the interaction of the OTCF with the PCF is not in our view a principal consideration for decision-making.

6.22. In principle, where the Project Commitment Fee and the OTCF do cross over, their objectives would be the same: removing speculative projects from the queue. As such, an optimal decision would see the OTCF act as a security floor and will only add additional commitment if the floor is not reached, irrespective of whether PCF is activated or not.

7. Resulting assessment of OTCF options

Section summary

This section compares the Original Proposal, the six WACMs and the baseline scenario against the benefits, risks, and parameter preferences set out above.

The Original Proposal aligns with the wider considerations approach and with each of our preferred parameters. WACM2 and WACM4 each depart from those preferences in a single respect. WACM1, WACM5 and WACM6 limit the OTCF at a project's maximum security exposure, which we consider a significant shortcoming. WACM3 is aligned with the internalisation of direct costs only approach.

Given the benefits expected from removing lower-commitment projects from the queue, we consider all of the modification options preferable to the baseline scenario.

7.1. The options available to Ofgem are constrained to the Original Proposal, the six WACMs, and the baseline scenario (reject Original Proposal and all WACMs). Below, we compare each option against the benefits, costs, and risks discussed in previous sections.

7.2. Table 2 summarises our analysis of each option. It displays a heatmap of how each option performs against the risks and preferred outcomes and parameters. The first two rows relate to approaches to determining the appropriate OTCF level. All options (apart from the baseline scenario) remove low commitment projects and, as such, are displayed as green. The options which align with the wider considerations approach have also been displayed as green.[28] The lower three rows shown in green are where an option aligns with the preferred parameters set out in Table 1. Setting the OTCF as a security or liability floor is not displayed as we do not consider there to be a particular benefit from one option or the other. We note that we do not

[28] Those displayed in red include those that either align with the internalisation of direct costs only approach (WACM3 and WACM5) and those that limit securities at the maximum securities exposure a project would have faced in the absence of CMP470 (WACM1 and WACM6) – and are thus not aligned with either approach.

consider each row to be equally weighted, and the table below should be interpreted only as an indicative summary of more complex trade-offs.

Table 2: Qualitative heatmap of options against preferred parameters

Options	Original Proposal	WACM1	WACM2	WACM3	WACM4	WACM5	WACM6	Baseline
Remove low commitment projects	Aligned	Aligned	Aligned	Aligned	Aligned	Aligned	Aligned	Not Aligned
Wider considerations approach	Aligned	Not Aligned	Aligned	Not Aligned	Aligned	Not Aligned	Not Aligned	Not Aligned
Not limited to max security exposure	Aligned	Not Aligned	Aligned	Aligned	Aligned	Aligned	Not Aligned	N/A
Returned on energisation	Aligned	Aligned	Not Aligned	Not Aligned	Aligned	Not Aligned	Aligned	N/A
Co-location exemption	Aligned	Aligned	Aligned	Aligned	Not Aligned	Aligned	Not Aligned	N/A

Original Proposal

7.3. We anticipate that the Original Proposal will achieve the policy goal of removing low commitment projects from the queue in a timely way. The Original Proposal's OTCF maximum is set at £25,000/MW, which aligns with the wider considerations approach. The Original Proposal also aligns with our assessment that OTCF should not be limited to a project's maximum security exposure, should be returned on energisation, and should provide exemptions co-located projects.

WACM1

7.4. We anticipate that WACM1 will achieve the policy goal of removing low commitment projects from the queue in a timely way. We also consider WACM1 is aligned with our assessment that the OTCF should be returned on energisation and that exemptions should be provided for co-located projects.

7.5. However, WACM1 limits the OTCF to a project's maximum security exposure and thus does not align with either the internalisation of direct costs only approach, or

the wider considerations approach. We consider this to be a significant problem when compared to the other available options.

WACM2

7.6. We anticipate that WACM2 will achieve the policy goal of removing low commitment projects from the queue in a timely way. WACM2's OTCF maximum is set at £25,000/MW, which aligns with the wider considerations approach. WACM2 also aligns with our assessment that the OTCF should not be limited to a project's maximum security exposure and that exemptions should be provided for co-located projects.

7.7. However, WACM2 does not align with our assessment that the OTCF should be returned on energisation, instead proposing a return at Milestone 8. As noted in Section 6.6, the net difference between these two options (and thus between the Original Proposal and WACM2) is not very significant. On balance, we consider it preferable that the OTCF is returned on energisation.

WACM3

7.8. We anticipate that WACM3 will achieve the policy goal of removing low commitment projects from the queue in a timely way. WACM3 also aligns with our assessment that it is better that the OTCF not be limited to a project's maximum security exposure and that exemptions are provided for co-located projects.

7.9. WACM3's OTCF maximum is set at £8,000/MW, which aligns with the internalisation of direct costs only approach. This does not align with our assessment that a higher OTCF maximum would likely provide higher net benefits to the energy system and to consumers. Furthermore, WACM3 does not align with our assessment that returning the OTCF upon energisation is the preferable approach. We note that WACM3 is also the only option that sets a floor in liabilities and not securities.

WACM4

7.10. We anticipate that WACM4 will achieve the policy goal of removing low commitment projects from the queue in a timely way. WACM4's OTCF maximum is set at £25,000/MW, which aligns with the wider considerations approach. WACM4 also

aligns with our assessment that it is better that the OTCF not be limited to a project's maximum security exposure and is returned on energisation.

7.11. However, WACM4 does not align with our assessment that there should be exemptions for co-located projects. As noted in Section 6.20, it is important that efficient locational signals be maintained, especially under an option that aligns with the wider considerations approach.

WACM5

7.12. We anticipate that WACM5 will achieve the policy goal of removing low commitment projects from the queue in a timely way. WACM5 also aligns with our assessment that it is better that the OTCF not be limited to a project's maximum security exposure and that exemptions are provided for co-located projects.

7.13. WACM5's OTCF maximum is set at £8,000/MW for post-trigger projects, which aligns with the internalisation of direct costs only approach. This does not align with our assessment that a higher OTCF maximum in alignment with the wider considerations approach would likely provide higher net benefits to the energy system and to consumers. Further, WACM5 does not align with our assessment that it is better that the OTCF is returned on energisation.

WACM6

7.14. We anticipate that WACM6 will achieve the policy goal of removing low commitment projects from the queue in a timely way. We also consider WACM6 is aligned with our assessment that it is better that the OTCF be returned on energisation.

7.15. However, WACM6 proposes to limit the OTCF to a project's maximum security exposure and thus does not align with either the internalisation of direct costs only approach or the wider considerations approach. We consider this to be a significant problem, compared to the other options. Further, WACM6 does not align with our assessment that it is better that exemptions are provided for co-located projects.

Baseline scenario

7.16. Considering the significant benefits we expect from at least removing low commitment projects, we believe all alternative options are better than the baseline option.

8. Conclusion

Section summary

Our initial view is that an OTCF set in line with the wider considerations approach is preferable to one based on the internalisation of direct costs only. We find that of the wider consideration approach options, the Original Proposal is the most likely to provide the highest net benefits.

8.1. Determining which OTCF option best achieves Ofgem's objectives requires two decisions: first, the level of ambition at which the OTCF should be set, and second, which of the available options best gives effect to that level of ambition. Both are directed at:

- Lowering bills by avoiding inefficient investment in the transmission system. This aligns with Ofgem's principal duty of protecting the interests of existing and future consumers.
- Removing a potential barrier to the delivery of BESS and other low carbon technologies in line with the CP30 Action Plan. This aligns with Ofgem's duty to protect consumers by helping the UK to achieve Net Zero.

Internalisation of direct costs only approach vs wider considerations approach

8.2. As discussed in Section 5, the internalisation of direct costs only approach and the wider considerations approach are both grounded in economic theory but differ in how quickly they seek to resolve oversubscription in the battery queue. Under the former, the OTCF would be set at the measurable negative externality — estimated at approximately £5,800/MW using the Wider Cancellation Charge as a proxy — on the basis that any resulting delay in capacity reducing to target would itself be efficient, because consumers would have been insulated from its cost.

8.3. We consider that this benchmark is likely to understate the true externality. It does not capture the security of supply risks arising from potential network under-build, nor the opportunity cost of progressing projects in other technologies. Both are real but resistant to robust quantification: we therefore expect total externalities to exceed £5,800/MW.

8.4. Two further considerations point towards a stronger signal. Firstly, we expect some developers to adjust only gradually or imperfectly to financial signals, whether through inertia or non-economic incentives. Slow adjustment would prolong the period over which capital is tied up unproductively. Secondly, oversubscription introduces uncertainty into sector-wide planning processes and the development of critical policy. This uncertainty may propagate into other parts of the sector at a cost to consumers that cannot be directly measured. System planning affects the whole electricity system, added uncertainty in that process and delay to the connection of other projects would have effects that are broad and difficult to reverse.

8.5. We recognise that a stronger intervention carries countervailing risks: over-correction leading to a temporary undersupply of an oversubscribed technology; selection of projects on the basis of access to capital rather than underlying value; and increased market concentration. As set out in Section 5, the additional benefits and risks of the wider considerations approach are prohibitively difficult to quantify, and the determination between the two approaches is accordingly one of judgement on the qualitative evidence available.

8.6. On balance, our initial assessment is that stronger commitment arrangements are likely to deliver consumer benefits by bringing forward viability decisions, improving queue quality and supporting more effective network planning. While the precise behavioural response remains uncertain, the evidence indicates that stronger intervention options affect a substantially larger proportion of the oversubscribed queue. We therefore consider that options aligned with the wider considerations approach are likely to deliver greater benefits and better align with the Applicable CUSC Objectives than options focused solely on directly quantifiable costs.

Options within the wider considerations approach

8.7. Three options are consistent with the wider considerations approach: the Original Proposal, WACM2 and WACM4. They differ in whether securities are returned at Milestone 8 or at energisation, and in whether co-located projects are exempt.

8.8. Our initial view is that the Original Proposal is the best of the options available. It sets the OTCF maximum at £25,000/MW, consistent with the wider considerations approach, and is not limited to a project's maximum security exposure. The Original Proposal returns securities at energisation, which removes the risk that a developer satisfies Milestone 8 on a technicality and then exits the queue, which would impose

network inefficiency costs at a late stage. As such, it is the most likely to provide the greatest benefits and best align with the Applicable CUSC Objectives.

8.9. The Original Proposal also retains the exemption for qualifying co-located projects. We consider this to be an important feature, particularly under the wider considerations approach: it preserves locational signals and mitigates the risk that efficient projects with lower liquidity are crowded out as the fee escalates. We consider the risk of developers gaming the exemption to be low, for the reasons given in Section 6 above.

8.10. WACM2 and WACM4 remain credible options, and the margin between them and the Original Proposal is narrow in the case of WACM2. We consider all options, including those aligned with the direct costs only approach, to be preferable to the baseline scenario, which would leave the oversubscription and its associated costs unaddressed.

Next steps

8.11. We emphasise that this is an initial view. The scale of projects' responses to the OTCF cannot be predicted with confidence, and our assessment rests substantially on qualitative judgement. We therefore welcome evidence from respondents, particularly on the behavioural response to the fee and on any basis for further quantification, and will take that evidence into account in our Final Impact Assessment. We welcome responses relating to all parts of the IIA through the consultation process outlined in the Consultation Document.