Department for Energy Security & Net Zero

Panel of Technical Experts

Report on the NESO Electricity Capacity Report 2025

July 2025

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Preliminary Comments & Summary of Recommendations

1. The role of the Panel of Technical Experts ("PTE") is to scrutinise with impartiality and to contribute to the quality assurance of the annual Electricity Capacity Reports (ECR) by the National Energy System Operator (NESO).[1] The purpose is to provide technical advice to inform the policy decisions at the Department for Energy Security and Net Zero (DESNZ) for the subsequent Capacity Market auction procurements, through this report and informal consultations.

2. During April and May 2025, the PTE were presented with the initial results from the modelling for the 2025 ECR. In response to comments from PTE and DESNZ, the final 2025 ECR was prepared by NESO and sent to DESNZ by 1 June 2025.

3. The PTE members who prepared this report on the 2025 ECR are Derek Bunn (Chair), Jacopo Torriti, Christopher Harris and Lisa Waters.

4. In fulfilment of our role, we have scrutinised NESO's 2025 ECR on the target capacity proposed for the T-1 Auction for Delivery Year 2026/27 and the T-4 Auction for the Delivery Year commencing 2029/30, and this document presents our conclusions.

5. Through the PTE's previous reports (2014-2024), the PTE has made 93 recommendations in total (of which 12 were from 2024) for improving the methodology and reliability of the modelling by which target capacities are calculated. NESO has taken actions on most of these as reported in the ECR. As usual, we make some recommendations for future work. In doing so the PTE are mindful of the need for the appropriate processes and procedures to be followed ahead of any changes that may be undertaken.

6. The PTE has engaged in relevant discussions with NESO, DESNZ and Ofgem during the process of NESO formulating the 2025 ECR. We are satisfied with the constructive and timely consultations and believe that all parties have worked well together in formulating the analysis and recommendations.

7. The overall analytical approach has been similar in principle to previous years, but substantially updated with new information and an evolution of some important aspects of the analytics.

8. We discussed thoroughly the sensitivities that went into the modelling and their inclusion in NESO's usual 'Least-Worst Regret' (LWR) criterion to determine the capacities to procure. The approach taken by NESO this year has departed somewhat from precedents by adding a risk premium to the results of the LWR. We support this ad hoc

[1] Previously National Grid Electricity System Operator (ESO) – now referred to as NESO throughout this report with the exception of historic PTE recommendations made to ESO.

use of a risk premium and expect that similar risk premia may gradually augment further the reliance upon the LWR approach as the methodology evolves to becoming based more upon stochastic risk simulations. We note, furthermore, that the requirement this year for the additional risk premium highlights the continuing need for government to review its Reliability Standard and consider whether this should be re-aligned, or re-interpreted, with the established risk appetite evidently adopted through the actual target setting processes. Whereas the Reliability Standard of 3 hours Loss of Load Expectation (LOLE) was defined in The Electricity Capacity Regulations 2014[2], its actual implementation for setting the target capacity has allowed for a degree of discretion.[3] Thus, in practice, since 2014, the revealed preferences of both NESO and the Secretary of State have been for a much higher level of security (lower LOLE). The PTE has no remit to comment upon what the Reliability Standard should be, nor to advise DESNZ on the appropriate level of risk aversion, if any, to include in the capacity procurements. However, it does advise on methodological consistency. The PTE has therefore taken the pragmatic approach, as in previous years, of assessing the 2025 ECR according to its consistency with the reality of the targets recommended by NESO and accepted by the government to date. Nevertheless, this year's explicit implementation of a risk premium adjustment to the LWR result does, we believe, display the increasing need to re-visit the Reliability Standard, and its associated parameters, so that risk premia in future can be applied from a more formal framework.

9. We have considered the target capacity recommendations by NESO and make the following recommendations:

    - Regarding the T-1 recommendation for the 2026/27 Delivery Year by NESO of 5.8 GW in the ECR, we are comfortable with the analysis and the inclusion of a 0.4 GW risk premium above the LWR results to maintain a level of risk aversion consistent with previous Secretary of State determinations. This procurement includes a substantial provision for expected non deliveries and, as usual the PTE would suggest an autumn review with respect to new information, particularly on non-delivery risks.
    - Regarding the overall T-4 recommendation for the 2029/30 Delivery Year by NESO of 40.1 GW, whilst we agree that this is appropriate according to the analysis in the 2025 ECR, we have been inclined to suggest that DESNZ may be able to use internal information sources to consider whether an additional small risk premium needs to be included to cover a number of uncertain elements on the supply side which are not explicitly modelled, such as the logistics of refurbishment, connections and possible non-delivery of Contracts for Difference (CfD) projects, as well as the increasing demand uncertainty which presents substantial model risk. The Secretary of State could choose to make this adjustment in the Autumn.

[2] The Electricity Capacity Regulations 2014, Regulation 6.
[3] NESO's requirements within the ECR under Reg 7(2) are stipulated as "having regard to the reliability standard" and Reg 12(5) for Secretary of State is to "take into account the reliability standard".

10. Thus, the PTE anticipates that more information will become available in time for the usual Autumn adjustments and suggests that a careful re-evaluation of the supply-side of the Base Case, notably changes to the connections queue, non-delivery and the interconnector risks be undertaken at that time.

11. We summarise our recommendations for interconnector de-rating factors below.

PTE Recommended Interconnector De-rating factors		
	2028/29 (previous T-4)	**2029/30 (T-4)**
Ireland	55%	**61%**
France	68%	**69%**
Belgium	68%	**69%**
The Netherlands	68%	**69%**
Denmark	66%	**69%**
Norway	82%	**77%**
Germany	66%	**69%**

12. Overall, we were very pleased with the open and constructive process of engagement with NESO and the DESNZ. We thank them for their extensive efforts to develop clear and timely analysis and address many of the technical issues which we have raised. We have also taken note of various industry comments, as invited annually by NESO, on the interconnector de-rating estimations.

Recommendations

13. The new recommendations in our report are listed below. The numbering follows on from the 93 Recommendations in previous PTE reports.

Recommendation 94: DESNZ should consider an update to the Reliability Standard, its parameters and relevant implications for the ECR assessments, to reflect the government's established and preferred level of resource adequacy risk, as revealed by procurement decisions for the capacity mechanism.

Recommendation 95: NESO to update the historical time series of demand and wind data to include 2024/25, thereby extending the dataset to a full 20-year history.

Recommendation 96: NESO to reconsider and clarify how demand flexibility types (such as residential, industrial and commercial DSR; transport DSR; and Power Responsive) are quantitatively incorporated into the ECR methodology.

Recommendation 97: NESO and DESNZ to consider revisions to the DSR de-rating methodology to reflect the evolving structure of the DSR market. The de-rating methodology needs to be changed given the proposed gradual phase-out of non-BM STOR.

Recommendation 98: NESO to explicitly set out in future ECRs the assumptions underlying new demand uptake across both T-1 and T-4 auction horizons.

Recommendation 99: NESO to integrate historic peak demand forecasting performance into its stochastic modelling of the Base Case demand uncertainty.

Recommendation 100: NESO to continue the work started with PTE 61 and PTE 81 to characterise more fully the empirical causal evidence on non-deliveries and non-availabilities.

Recommendation 101: NESO and DESNZ should reconsider the appropriate de-rating method for nuclear as the assets reach the end of their lives and the sample size reduces to an asset specific level.

Recommendation 102: NESO with DESNZ should consider how Capacity Market Units' exit-to-decarbonise should be modelled in the ECR for future years.

Recommendation 103: DESNZ and NESO, with industry input, to consider a timetable that allows for CfDs, connection applications and the Capacity Market to work in the most efficient manner with respect to the timely flow of information to support the related decision-making.

Recommendation 104: NESO should undertake an empirical analysis of a recent and substantial sample of interconnector non-flows to GB. On the basis of this, NESO should consider constructing, for key risk scenarios such as dunkelflauten, intuitive correlation matrices to inform the correlation analyses used for interconnector de-rating factors.

Recommendation 105: NESO should consider estimating the interconnector de-rating factors more consistently with the actual, rather than nominal, GB LOLE target procurement in the ECR.

Recommendation 106: The modelling of de-rating factors should be specified for individual interconnectors (as per PTE 33) even if subsequently grouped by country.

Recommendation 107: NESO should consider in more detail the relationship between interconnector de-rating factors and; i) the diurnal country demand profiles and the evolving role of DSR, ii) the installed storage fleets with profiles of their durations, iii) lagged correlations of residual demand between GB and neighbours, iv) the potential effects of greater use of voltage reductions (for example, flattening the peak to the trailing edge), which could all affect interconnector flows.

Introduction

Role of the Panel of Technical Experts

14. The government commissioned, through an open and transparent procurement process, an independent Panel of Technical Experts (the PTE) for the enduring Electricity Market Reform (EMR) regime, commencing in February 2014. The role of the PTE is to scrutinise with impartiality and to contribute to the quality assurance of the annual ECRs by the Delivery Body (now NESO). The purpose is to provide technical advice to inform the policy decisions at DESNZ for the subsequent Capacity Market auction procurements.

15. The PTE's first report on NESO's analysis to inform Capacity Market procurement decisions was published in June 2014. This is the PTE's 12th report, focused on the modelling and results of NESO's recommended capacity to secure for the 2029/30 T-4 Delivery Year and for the 2026/27 T-1 Delivery Year.

16. The background of the members and terms of reference of the PTE are published on the government website.[4]

17. This report has been prepared for DESNZ by Derek Bunn (Chair), Jacopo Torriti, Christopher Harris and Lisa Waters.

Scope

18. The scope of the PTE's work is to impartially scrutinise and quality assure the analysis carried out by NESO for the purposes of informing the policy decisions for the Capacity Market procurement. This includes scrutinising: the choice of models and modelling techniques employed; the inputs to that analysis (including the ones DESNZ provides); and the outputs from that analysis - scrutinised in terms of the inputs and methods applied. The PTE reviews whether the analysis is robust and fit for the purpose of government taking key policy decisions. The PTE assess the limitations of the analysis and how these may impact the government's deliberations on capacity procurement. This includes, for example, considering potential conflicts of interest NESO or others involved might have in influencing the analysis.

19. The PTE's role is a technical function and it has no remit to make suggestions on the Capacity Market mechanism design, its regulation or wider EMR policy, government's objectives, or the deliverability of those objectives, unless otherwise requested. The PTE's Terms of Reference mean it cannot comment on affordability, value for money or achieving least cost for consumers. These matters are excluded from the PTE's scope and therefore from this report. Nevertheless, the PTE is mindful of the need to avoid the

[4] Further information available on the PTE webpage.

costs to consumers of over-procurement. This means the Panel does not have a role in advising how the analysis should be interpreted for the purpose of those policy decisions, but, where relevant, the PTE has commented on how policies impact the modelling and parameter setting in the ECR.

Process

20. During the course of the PTE's work, NESO has presented its methods, assumptions and outputs in relation to their core task of recommending the auction target capacity in the Capacity Market and the PTE has had opportunity to question NESO during the development of its analysis and recommendations.

21. To carry out its work, the PTE met with NESO, DESNZ and Ofgem regularly during 2024/25 to discuss the development projects, the production plan and subsequently the modelled outputs for the 2025 ECR. Subsequently, the PTE provided interim views to DESNZ before presenting preliminary drafts of this report for further considerations and feedback from DESNZ, Ofgem and NESO.

22. The PTE has generally focussed more closely on the areas that appeared to be of highest impact and greatest uncertainty. Accordingly, our commentaries are structured under:

    - Demand evolution
    - Supply-side changes
    - Interconnector de-rating

23. As required by the PTE's Terms of Reference,[5] the PTE also kept in mind the potential for NESO to be confronted by potential conflicts of interest. The PTE, throughout this process, has sought to mitigate this by carefully challenging assumptions and the PTE has maintained a presumption that a natural tendency for any utility or System Operator would be to be risk averse and to therefore slightly over-secure resources. We note that NESO would bear some of the loss of reputation for any blackouts, and bears none of the costs of over-procurement, and so could be expected to weight the possible risks of procuring less capacity more than they might credit the cost-savings. The PTE, however, has no evidence that would make us believe that NESO has substantially exploited its privileged position.

24. This report is not comprehensive nor is it a due diligence exercise, but the PTE believes that it has nevertheless identified some important issues that have material consequences. Accordingly, and in line with our approach in previous years, the PTE has not remarked on details of various matters which were raised and satisfactorily resolved or are part of on-going NESO modelling developments.

[5]Further information, including Terms of Reference, available on the PTE webpage.

25. The PTE recognises the work that NESO prioritised during 2024/25 to support the government's Clean Power 2030 (CP30) Action Plan meant that the delivery of ECR 2025 was done in a shorter period than usual. This also meant that the PTE was restricted in its engagement and, as a consequence, necessarily focussed only upon the essential matters for setting the 2025 parameters, deferring most of the methodological developments until next year.

26. This report has been prepared from information provided by the DESNZ, NESO and Ofgem and the collective judgement and information of its authors. We have also taken account of written stakeholder responses to the interconnector briefing material made public by NESO. Whilst this report has been prepared in good faith and with reasonable care, the authors expressly advise that no reliance should be placed on this report for the purpose of any investment decisions and, accordingly, no representation of warranty, expressed or implied, is or will be made in relation to it by its authors and nor will the authors accept any liability whatsoever for such reliance on any statement made herein. Each person considering an investment must make their own independent assessment having made whatever investigation that person or organisation deems necessary.

Commentary on Analysis and Results

Introduction and context

27. As in its previous ECRs, NESO lays out its modelling approach and its scenarios and sensitivities that frame its findings on the amount of capacity to secure in the auctions. In the legislation of 2014, the government's Reliability Standard of 3 hours Loss of Load Expectation (LOLE) is defined.[6] Nevertheless, whilst the 3 hours LOLE has been the expressed target, in practice it has been interpreted as 3 hours LOLE under a cautious "Least Worst Regret" (LWR) consideration over a range of sensitivities and scenario conditions, resulting in lower associated Base Case LOLE. DESNZ determinations have broadly endorsed this position to date, which have been described as cost-effective by 3 Capacity Market reviews, including the official 5-year and 10-year assessments.[7] The "regrets" in the LWR calculation are evaluated at Value of Loss of Load (VoLL) for under procurements and Cost of New Entry (CONE) for over procurement, both parameters having been set over 10 years ago. The result is that the procured LOLE in recent years, under the assumption that the Base Case expectations are unbiased, has been substantially less than 3 hours. Furthermore, the approach taken by NESO this year has included a risk premium additional to the results of the LWR to align procurement at T-1 with the previous levels of risk aversion. The explicit implementation of this risk premium adjustment to the LWR result does, we argue, display an increasing need to re-visit the Reliability Standard, the implications of the LOLE definition[8] and an update to the related VoLL and CONE parameters.

Recommendation 94: DESNZ should consider an update to the Reliability Standard, its parameters and relevant implications for the ECR assessments, to reflect the government's established and preferred level of resource adequacy risk, as revealed by procurement decisions for the capacity mechanism.

28. Thus, given the difficulty of communicating the LOLE target, we find it very useful to see in the ECR that the recommendations indicate how the anticipated de-rated margins compared to previous years. Closer to real time, the margins and LOLEs reported in the Winter Outlooks have also demonstrated the high levels of reliability achieved.[9]

[6] The Electricity Capacity Regulations 2014, Regulation 6.
[7] Reports include: Capacity Market: Five-Year Review, Capacity Market Evaluation and the Capacity Market: Ten-Year Review.
[8] The "loss of load" in the LOLE calculation is defined in legislation for GB, for the purposes of the ECR assessments by NESO, as occurring at the point at which the System Operator has to start taking mitigation actions in a stress event to potentially avoid or limit consumer disconnections. This is unlike the more usual definition, as used by ACER, for example, in its EU directive, which would define loss of load at the point of consumer disconnections. Nevertheless, even in GB, VoLL was apparently estimated as the average cost of actual consumer disconnections.
[9] For example, as detailed in NESO's Winter Outlook reports.

29. The major elements in the analysis are GB demand and supply, together with an increasing reliance upon interconnection resources from neighbouring countries. We therefore organise this section according to these main elements.

GB Demand

General Comments

30. As in previous years, peak demand is defined as the unrestricted GB national demand plus distributed generation, based on Average Cold Spell (ACS) conditions. Unlike previous years, the updated data for NESO's Future Energy Scenarios (FES) 2025 pathways and counterfactual was not used in the 2025 ECR; only the 2025 Base Case was updated. Sensitivities were modelled around the Base Case as in previous years. The PTE notes that, over the past year, notable progress has been made in demand modelling, particularly through more granular segmentation of residential demand. This includes updated peak load profiles for electric vehicle charging, as well as new profiles for heat and transport demand. Some of these developments have influenced the peak demand projections as reflected in the Base Case data.

31. We note that many of the structural drivers used to define the FES pathways are also used as inputs in the Base Case uncertainty modelling, often with probabilistic treatment. This raises the issue of overlap, as the FES scenarios may not offer entirely distinct insights but instead cover similar ground through different framing.

32. With the planned less frequent publication of FES pathways from next year,[10] there is a need to better integrate the Base Case assumptions and sensitivities into the definition and quantification of Base Case uncertainty.

33. The time-collapsed demand approach currently draws on 16 years (2005/06–2021) of historical hourly transmission demand data, adjusted to include estimated embedded wind and solar generation. Each annual profile is scaled to reflect the relevant FES forecast by applying the ratio of the FES ACS peak demand to the historical ACS peak for that year. However, the underlying time series used in this approach has not been updated in recent cycles and still only covers up to the 2020/21 winter, limiting its relevance to current and emerging system conditions.

34. There is, therefore, a clear opportunity to enhance the robustness of the modelling by updating the historical demand and wind time series to include data from subsequent winters – up to and including 2024/25. This would expand the dataset to a full 20-year history, improving the representativeness of the demand patterns used in stochastic modelling. This extension to a full and more recent 20-year dataset would strengthen the analytical foundation for the time-collapsed demand methodology and ensure it better captures recent trends and system changes.

Recommendation 95: NESO to update the historical time series of demand and wind data to include 2024/25, thereby extending the dataset to a full 20-year history.

[10] As detailed in NESO's FES 2025 Summary of Stakeholder Engagement Report.

35. The ECR methodological approach consists of treating demand side response (DSR) as a supply technology. The contribution of DSR participating in the Capacity Market to alleviate peak demand is not taken into account when modelling demand. DSR is considered as supply in the Capacity Market since it is assumed to participate in the auction. In this year's ECR, residential, industrial and commercial DSR; transport DSR; and Power Responsive are described as key avenues for consumer flexibility and are listed under the DSR methodology. However, their explicit contributions are not clearly described. PTE Recommendation 83[11] suggested a separation between explicit and implicit flexibility. The ECR does not currently reflect the potential scale of demand flexibility by 2030, despite projections such as those in CP30 suggesting that flexibility measures could reduce peak electricity demand by 11–12 GW. Thus, the contribution of demand flexibility measures to peak demand alleviation is not distinctly captured due to the methodological separation between DSR and demand modelling.[12]

Recommendation 96: NESO to reconsider and clarify how demand flexibility types (such as residential, industrial and commercial DSR; transport DSR; and Power Responsive) are quantitatively incorporated into the ECR methodology.

36. The current DSR de-rating methodology is based on a 3-year rolling average of the committed availability of non-Balancing Mechanism Short Term Operating Reserve (non-BM STOR) providers during winter peak periods, as defined in the Capacity Market Rules. However, this approach may no longer reflect the evolving nature of the DSR market, as it risks overlooking more recent developments and the growing diversity of DSR services and participants. PTE Recommendation 68[13] provided the rationale for considering if the capacity of facilities providing ancillary services is being accounted for properly in the resource adequacy calculation under stress events.

37. Given the proposed gradual phase-out of non-BM STOR, the DSR de-rating methodology and the regulatory framework that underpins it must be updated. NESO is currently bound by the Capacity Market Rules, which mandate the use of non-BM STOR. As a result, any changes would require policy amendments from DESNZ to enable NESO to take further action. The PTE's opinion is that relying solely on a shrinking subset of the market no longer provides a representative or reliable basis for assessing DSR capacity contribution.

38. Within this theme, there is also a timely opportunity to address which types of DSR are, like storage, duration-limited in their ability to deliver. It seems unlikely that domestic customers could, or would, for example, stay off the system in an event that carried on for some hours over a winter teatime. Except in the BM, DSR services tend to be for short periods, like the STOR windows.

[11] PTE Report 2024.
[12] The Capacity Market (Amendment) (No.3) Rules 2024 are relevant here as well, noting the introduction of a "domestic" supply flag for DSR, as detailed in Part 4.
[13] PTE Report 2022.

39. The PTE puts forward the following concrete examples that could be used to improve the DSR de-rating methodology beyond its current reliance on the non-BM STOR data:

    - Expanding time horizons beyond 3-year rolling average by incorporating a longer historical dataset, potentially spanning 5–10 years.
    - Incorporating a broader set of DSR services and including Demand Flexibility Service (DFS); BM registered DSR; ancillary services participation (for example, Frequency Response, Dynamic Containment).
    - Excluding generation assets from the DSR baseline. This would involve revising the baseline dataset to exclude Open-Cycle Gas Turbines (OCGTs) and any other embedded or flexible generation being packaged within DSR.
    - Using real event-based performance data by integrating performance data from real activation events across different DSR schemes (for example, DFS activations during winter 2022/23 and 2023/24).

Recommendation 97: DESNZ and NESO to consider revisions to the DSR de-rating methodology to reflect the evolving structure of the DSR market. The de-rating methodology needs to be changed given the proposed gradual phase-out of non-BM STOR.

40. PTE84[14] highlighted the importance of improving the accuracy of demand forecasts by refining estimates of how different sectors contribute to peak electricity demand. Previous ECRs have acknowledged sectoral growth trends but have not consistently provided detailed breakdowns of their impact on peak demand.

41. New demand from more widespread electrification represents a major element of projected growth in peak demand over the next 10 years. One sub-sector of particular importance consists of data centres, which represent a significant and growing share of projected overall electricity demand over the next decade. This is especially relevant given the sharp projected increase in high-intensity digital infrastructure and the potential for geographically concentrated load. The NESO demand modelling process has made progress in this area through the development of new data centre demand information. However, there remains a need for greater transparency and granularity in how these projections are incorporated into peak demand modelling.

42. In the GB Supply section below, we comment upon the uncertainties introduced from the connections queue. Demand connections are also subject to connection queues and the queue management process. We therefore question whether a significant increase in demand from larger sites is feasible in the short term.

43. NESO should explicitly set out the assumptions underlying data centre demand uptake across both T-1 and T-4 horizons. This includes clearly stating the volumes of anticipated connected capacity and the expected contribution of data centres to system peak demand. Alternatively — or in addition — NESO should publish granular

[14] PTE Report 2024.

projections for growth associated with new demand uptake as part of the FES or ECR process.

Recommendation 98: NESO to explicitly set out in future ECRs the assumptions underlying new demand uptake across both T-1 and T-4 horizons.

Uncertainty Analysis

44. Base Case peak demand stochastic uncertainty modelling is used to inform the low and high peak demand sensitivities. The PTE understands that for LOLE calculation, the key is not the ACS peak itself, but how each winter's hourly demand out-turns compare to that ACS peak. However, in this year's ECR report, the Base Case High Demand and the Base Case Cold Winter sensitivities differ significantly.

45. Historic forecasting performance does not feature in the uncertainty modelling. While peak demand has been declining in recent years, successive ECRs point to changes in the peak demand which are not in line with historic peak demand trends. This raises concerns about potential over-procurement and the consequent costs to consumers.

46. To enhance the robustness and credibility of peak demand uncertainty modelling, NESO should incorporate historic forecast performance into its stochastic modelling framework. This would help calibrate the uncertainty bounds used to derive low and high demand sensitivities and prevent systemic bias in future projections.

47. Historical bias trends should inform the shape and skewness of the probability distribution applied in the stochastic modelling. Backtesting the stochastic model against previous years' actual outcomes could reveal structural weaknesses or overly conservative assumptions in current approaches. Such an exercise could also validate the accuracy of the model, or even indicate that previous procurement levels were insufficient. This adjustment would support more realistic central estimates and tighter uncertainty bounds.

Recommendation 99: NESO to integrate historic peak demand forecasting performance into its stochastic modelling of the Base Case demand uncertainty.

GB Supply

General Comments

48. NESO's modelling of the supply side starts with the use of the Transmission Entry Capacity (TEC) register. This records the capacity and generation types that are connected to the transmission system, larger embedded plants, and new plants that are planning to connect, with their connection dates. Given the changes to the connection queue being progressed under the Connection Use of System Code (CUSC), i.e. CMP434[15] and CMP435[16], the forward view taken from the TEC register will change later this year. This queue reordering will also impact some new build plants which are due to connect to the distribution networks.

49. New build plants with Capacity Market and Contracts for Difference (CfD) agreements from previous allocation rounds have been protected from having their connection dates moved to protect renewable targets and security of supply. The queue reordering also protects any station with a 2025/26 connection date which is already under construction. However, any new build plants without existing agreements may have their connection dates significantly altered, and some may then choose to give up their place in the queue. The PTE understands that DESNZ has proposed a rule change to allow plants to conditionally prequalify for this year's auctions even though their current connection date is too late.[17] However, this is also moving the auction dates forward, so the T-4 allows only c3.5 years to deliver. This may deter larger projects or increase their non-delivery risk (although they are likely to be late, rather than not delivered). This adds to the uncertainty.

50. Investors have always had the option not to progress with a development, which would then contribute to non-delivery under the Capacity Market. The introduction of the Strategic Spatial Energy Plan (SSEP) will introduce some central planning for future investments of a kind that the GB market has not seen since privatisation. It is therefore unknown how this will play out. Although we do not yet know how much capacity may be moved in the queue reordering, and what it then may choose to do, the process does make the starting point for the modelling more uncertain than in previous years if the reordering changes the technology mix.

51. The PTE remains concerned, therefore, about the risk of non-delivery due to growing uncertainty around connection dates – whether resulting from delays, queue reordering, or project withdrawal. This uncertainty is particularly relevant to the T-4 and T-5 to T-8 analysis. This is not simply an issue for the capacity obligated plant, but for the contracted background as well. The PTE notes that the CUSC has seen two modifications[18] raised by wind farm owners to alleviate their financial losses from late

[15] Further information on CMP434.
[16] Further information on CMP435.
[17] Further information on CP388.
[18] CMP452: Suspension of TNUoS Payments for generators connecting during the 2024/25 charging year and CMP451: Suspending TNUoS payments when TOs and/or NESO has delayed connection date.

connections. While there is an issue for investors, the ECR modelling assumes that parties with connection dates are connected on those dates, but we are aware that there are connection delays. We expect that a review of the proportion, timing and type of delayed connections at both the transmission and distribution level will be undertaken as soon as relevant information becomes available. While a full review is not possible before any Autumn adjustments to the capacity procurements, it should be possible to see the impact on prequalification results, at least.

52. The PTE has previously noted (Recommendations PTE 69 and 88), in consideration of the networks becoming increasingly congested, a concern that NESO's modelling assumes that, at a time of system stress, the plant able to run will actually have the network capacity to export. This assumption has not been tested and the PTE suggests that further modelling of the various types of stress events that might be impacted by network constraints would appear to be prudent. Network constraints can cause specific impacts on significant volumes of capacity, for example including interconnectors.

53. As with previous years, the PTE notes that the timing of the termination for failure of Satisfactory Performance Days (SPDs) means that the ECR does not have the best view of Capacity Market non-delivery. It may be possible to improve this with Rule changes around information provision. Larger plants with significant issues can be visible via the REMIT data, but smaller plants and DSR sites are not visible. This would be especially useful for informing the T-1 auction target. PTE Recommendation PTE62, which proposed that the timing of all Capacity Market related activities should be revisited to best inform the ECR, seems even more important today as the T-1 auction is becoming far more important, as elaborated below.

54. For the reasons outlined above, the PTE remains concerned about the level of non-delivery, as we have been for some years. We have previously recommended that non-delivery be examined in detail (see Recommendations PTE61 and PTE86), as recent levels have been very high, even accounting for some large individual units skewing the data for some years. A case-by-case improvement in understanding the drivers would allow more robust modelling of their impacts. The PTE also notes that while the modelling adjusts for non-delivery under the Capacity Market, it has not adjusted for non-delivery under other schemes such as the CfDs, despite some observable events (see below).

55. NESO's Base Case assumes future unknown non-delivery of 3.9 GW, which is in line with the average level of non-delivery seen after the T-1 auction for the last 5 winters. The 3.9 GW has 0.8 GW of assumed non-delivery and 3.1 GW of statistically modelled future unknown non-delivery after the T-1 auction. While the future unknown non-delivery is now modelled probabilistically, NESO has noted that the 0.8 GW is likely to become known before the T-1 auction. The PTE agrees that adjusting the target explicitly for this relatively high non-delivery is prudent.

56. The PTE is concerned that the rate of non-delivery could also increase as we head towards 2029/30, due to factors such as lower running hours, increasing supply chain

costs and increasing transmission related risks. This could then increase the T-1 target for 2029/30 as well as the intervening T-1 auctions. However, parties being able to secure longer contracts[19] with lower capital expenditure may delay some plant retirements. This adds to the uncertainties outlined above, which are not likely to decrease as there is a fundamental change in technologies and market arrangement as GB moves towards CP30.

Recommendation 100: NESO to continue the work started with PTE 61 and PTE 81 to characterise more fully the empirical causal evidence on non-deliveries and non-availabilities.

57. Related to non-delivery is the issue of the value of CONE. CONE is an auction parameter and also used in the LWR calculations. Costs of most new build power stations have increased significantly in the last few years, evidenced by the cancellation of a number of new build projects. The clearing price in recent Capacity Market auctions has been increasing and the price cap may no longer be appropriate. This is a policy issue for DESNZ, but PTE feels it would be remiss not to observe that this could be an issue going forward in securing adequate liquidity in the auctions to ensure delivery.

De-rating Factors

58. Looking across the different technologies, the PTE generally agrees with the assumptions that NESO have made. The methodology for conventional plant de-rating factors is prescribed in the Capacity Market Rules. But, as we have mentioned before, the use of OCGT data to set the de-ratings of reciprocating engines is not optimal and improved data on the operation of embedded plant is desirable. There are now far more small assets in the BM, which could make it possible to use of the Maximum Export Limits (MEL) data for their technologies.

59. The issues surrounding the lack of information on embedded plant remains, despite the efforts of the Distribution Network Operators (DNOs) to improve and align their registers. The PTE is disappointed that so little progress has been made by the DNOs in sharing or publishing data that could better inform NESO's modelling. Additional operational data should be available as a result of more embedded plant participating in wholesale markets, either via NESO or via their local DNO. This data, along with BM data, may now be sufficient to inform the de-rating factors for these classes of technologies or at least to give a sense check that the Combined-Cycle Gas Turbine (CCGT) class provides a sensible proxy.

60. There are now only 5 operational nuclear power plants, most nearing the end of their lives, and this is making the data set for establishing the de-rating factors too small to be sufficiently reliable. As these plants move to end of life, looking back at 7 years of data

[19] Government Response to the Capacity Market Consultation on Maintaining Security of Electricity Supply and Enabling Decarbonisation.

for the whole fleet seems inappropriate. Hartlepool and Heysham 1 are scheduled to stop production by 2027, while Heysham 2 and Torness are expected to be decommissioned in 2030. EdF says that Hinkley C is not due to commission until 2030.[20] NESO and DESNZ should consider whether the de-rating methodology remains fit for purpose, though recognising any changes require legislative changes as well.

Recommendation 101: NESO and DESNZ should reconsider the appropriate de-rating method for nuclear as the assets reach the end of their lives and the sample size reduces to an asset specific level.

61. In the context of only Sizewell B taking a Capacity Market agreement last year in the T-4, we observe that following the recent Rule changes, it is possible for eligible opted-out plant of the T-4 auction to opt-in again for the T-1 auction for a given Delivery Year. The ECR modelling does not know if the plant will become available at the T-1 stage. However, as the market changes, DESNZ may want to consider if the policy design, including auction target setting, needs to take account of increased market entry at T-1.

62. The ability for some plants to leave the market to decarbonise will also increase the risk of the T-1 target needing to be greater, depending on the volume of plant exiting their capacity agreements. The government has already acknowledged that such plant will be unable to give the 5 years warning to allow for market exit to be considered in the ECR modelling for the T-4 target in future years.[21] Longer notice periods would also not result in the rapid decarbonisation of the market which the CP30 target requires. Further, it is improbable that the plant exiting will do so in a way that aligns with the Delivery Year dates in the Capacity Market Rules. Consequently, as the DESNZ policy develops further, NESO may need to find a way to model not just plant exits, but plant returns with potentially different technologies and/or fuels as part of the management of security of supply risks in the target setting process. These could imply different de-ratings determined outside the Capacity Market. The PTE has not had time this year to discuss this in detail with NESO, but the issue appears to be imminent and the need to reflect the market changes in the modelling may be important for the 2026 ECR.

63. As we have seen with storage, new fuels and technologies are difficult to model. They may not operate in the way envisaged, nor may they be able to operate as flexibly as they can under existing market rules. Their performance is therefore untested and the de-ratings thereby unknown. For the purpose of the ECR risks, these are factors that have to be considered in the model even if the plant is not included in the Capacity Market. While international experience may be helpful, much of what investors in technologies such as hydrogen and carbon capture are trying to achieve in the GB market is cutting edge.

[20] EdF 2025 Update on UK Nuclear Fleet Strategy
[21] Government response to consultation on Capacity Market: Proposals to maintain security of supply and enable flexible capacity to decarbonise.

Recommendation 102: NESO with DESNZ to consider how Capacity Market Units' exit-to-decarbonise should be modelled in the ECR for future years.

64. The design changes to allow cheaper refurbishments[22] is, in our view, a sensible step in considering the best way to maintain system security in this rapidly changing market. It will be relevant to consider how many and what type of assets progress with refurbishment. Informal market intelligence has suggested that while some parties have been prequalifying as "Refurbishing", in the auctions a large volume is then taking only one-year agreements as "Existing".

65. The Renewables Obligation (RO), closed to new plant in 2017, is being replaced by the CfD regime, but as the contracts were for 20 years the RO does not fully unwind until 2037. The previous government proposed to calculate the RO by headroom until 2027, then fix the price of a Renewable Obligation Certificates (Fixed ROC) as the scheme support ends. The current government has given no update on the policy and this therefore adds to uncertainty around future RO support and the incentives it will face. The PTE noted last year that there remains the option for RO plant to join the Capacity Market. For now, NESO's modelling is robust, but clarity on policy changes would help with the modelling for T-1 auction target next year.

66. NESO are forecasting higher RO and CfD capacity to be delivered out to 2029/30. The confirmation of a short-term support mechanism for large-scale biomass to transition to power bioenergy carbon capture and storage,[23] due to run from 2027 to 2031, is therefore included in the model and leads to a reduction in the T-4 auction target. The PTE recognises that the proposed support for large biomass is not yet finalised, having been referred to the Subsidy Advice Unit (SAU) at the end of May. However, NESO's assumptions are sensible given the government's support for this new regime. It is currently unknown if any other biomass will seek similar support.

67. The modelling also forecasts an increase in de-rated wind capacity outside of the auction resulting in more Capacity Market-ineligible capacity. Again, this feeds into the T-4 auction target as a reduction in the recommended target (-0.3 GW). The cancellation of Orsted's Hornsea 4 project occurred in time to feed into the modelling assumptions, but the PTE notes that this event may be a symptom of other CfD renewables projects suffering from the same increasing supply costs and interest rates that Orsted noted in its cancellation announcement.[24] Non-delivery of plants outside the Capacity Market should therefore be looked at in the wider review of non-delivery the PTE has proposed (PTE100).

68. Regarding the contribution that wind makes to security, we have previously recommended that NESO should extend the use of operational data to check or inform their modelling, in line with recommendation PTE70.[25] The PTE still consider that the

[22] Government response to consultation on Capacity Market: Proposals to maintain security of supply and enable flexible capacity to decarbonise.
[23] Government response on a short-term support mechanism.
[24] Orsted 2025 announcement on Hornsea 4.
[25] PTE Report 2022.

underlying operational data is relatively old and the new locations of wind farms, their size, etc. may influence observed operations differently today. This could also link to the work on network constraints (see paragraph 52 above) as it is most often wind that is constrained off the system.

69. As the CfD Allocation Round 7 (AR7) will be run later this year, the renewable forecasts in the 2025 ECR cannot be informed by the outcome of the allocation round. Furthermore, with the confluence of connection queue management, CfD allocation rounds and Capacity Market processes, timely data is essential for efficient modelling by NESO. This highlights the need for DESNZ to review the timing of activities across the market to ensure that the best information can be taken into account for all NESO modelling. Again, how these policies are implemented are for DESNZ to decide, but NESO's new, wider role in market planning will be best achieved by better data and more logical ordering of the various energy market allocation rounds, be that under the Capacity Market, CfDs, connections windows or other mechanisms.

Recommendation 103: DESNZ and NESO, with industry input, to consider a timetable that allows for CfDs, connection applications and the Capacity Market to work in the most efficient manner with respect to the timely flow of information to support the related decision-making.

70. The solar power forecasts look credible and the evidence is robust. As the real cost of solar panels has reduced[26] and the government is seeking to make planning for all power stations easier, as well mandating solar on buildings[27], there are good reasons to believe solar expansion will continue at pace. While the de-rating factors have slightly reduced, this is a reflection of their market penetration as the Equivalent Firm Capacity (EFC) de-rating methodology sees additional intermittent capacity adding incrementally less to security. Furthermore, the market is seeing more solar co-locating with storage. This is likely to impact the operation of the storage, but more importantly the installed capacity of solar could be over-stated. As storage is controllable, it is most likely to discharge at times of higher prices, ideally using solar to charge. Solar will run if it can and the power prices are positive. Modelling the behaviour of hybrid solar and storage facilities appears to be an emerging challenge.

71. On storage we note the changes in the de-rating factors. The Scaled EFC methodology has resulted in relatively small changes to the de-rating factors this year. Going forward the changes to installed battery storage, and renewables, may have a greater impact if this modelling method continues. As noted in PTE71,[28] the PTE considers that there is now enough storage capacity in the BM and ancillary services markets to inform the technical de-rating factors alongside the EFC methodology. However, we recognise that the Capacity Market Rules would need to change in order to alter this de-rating methodology.

[26] DESNZ Solar photovoltaic cost data.
[27] See the DESNZ Solar Roadmap – Part 2.
[28] PTE Report 2022.

72. Furthermore, as the installed capacity of storage increases, often with larger units coming online and possibly located behind constraints under NESO's SSEP, the way storage is de-rated and modelled will become more challenging. This is not simply about the duration of support that they can offer, but charging behaviours around Capacity Markets Notices (CMNs) when storage will have an incentive to charge so as to fulfil their CM obligations, thereby increasing demand, and then discharge simultaneously if a stress event is declared.

73. While we have concerns about the incentives on storage in the Capacity Market, we are also conscious that storage is able, unlike other technologies, to declare their own connection capacity from which they are de-rated. We are therefore concerned that the potential contribution of storage to security may be being understated, as the Capacity Market declared capacity could be a lot lower than the installed capacity at storage sites. Again, informal market intelligence suggests storage assets are continuing to declare at lower capacities and with longer duration. As we have noted previously, storage can discharge at different rates depending on the circumstances to which it is responding. It is possible that the Capacity Market's Extended Performance Test (EPT) requirements are incentivising these declarations.

74. The PTE recognises that NESO has raised with the Capacity Market Advisory Group (CMAG), in line with PTE Recommendation 87,[29] the need for all of the historic Capacity Market Registers to be updated with additional data on storage. Knowing their actual capacity rather than their declared capacity would allow for further consideration of the actual size of the storage fleet. This data, along with increasing amounts of operational data, may change the way storage can be modelled in future.

75. The DSR de-rating factor has increased further this year. NESO have informed us that this was a result of the move of non-BM STOR to day-ahead procurement from seasonal contracts. The PTE has discussed with NESO that we do not consider the use of non-BM STOR to be appropriate. However, with NESO's proposal to transition away from STOR to a new Slow Reserve product, a change will be necessary. We understand that the new service will not go live until October. Therefore, this will not provide sufficient data for de-rating next year.

76. The PTE has noted above that DSR is similar to storage in being duration limited (see paragraph 38). While customers may be able to load shed for a period of time, it is unlikely to be able to respond for hours or even days on end. Further discussion of DSR was provided previously in the GB Demand section of this report.

77. The PTE notes that future ECRs may need to consider different modelling approaches to produce new de-rating factors associated with Long Duration Electricity Storage (LDES), along with associated Capacity Market Rule changes. Technical details of the LDES Cap and Floor scheme and its operation have now been released by Ofgem.[30] We are aware that NESO have evaluated the potential impacts of increasing the

[29] PTE Report 2024.
[30] Ofgem decision on the LDES Cap and Floor application window 1.

minimum duration and, from a security of supply and operability point of view, it found that there are unlikely to be material impacts from increasing the minimum duration limit to 8 hours. Nevertheless, we raise the question of whether NESO should commence work on whether technology-specific de-rating factors for LDES should be developed, at least for the modelling.

Preview of T-5 to T-8

78. PTE thanks NESO again for responding to our recommendation (PTE80)[31] to give a forward look at T-5 to T-8 delivery years. While this is a high-level analysis, the trend from 44.5 GW to 48.4 GW suggests an apparent need for conventional generation to continue to support a market increasingly dominated by renewables. We have not, however, advanced any implications which this forward view might have for modifying the T-1 and T-4 auction procurements.

[31] PTE report 2023.

Interconnectors

General Comments

79. In 2024[32], PTE noted 9 specific challenges for interconnectors with respect to their de-rated contribution to the capacity target. In summary these were: the physical entity of an interconnector being a “wire” and not a generator, System Operator (SO) relationships, compensation structures, coupling and coupling inefficiencies, jurisdiction borders such as across Europe, loop flow in alternating current (AC) systems with direct current (DC) links, opacity of SO-SO countertrades, the relationship with storage, and behaviours of various actors.

80. The situation is becoming more complicated. For example: i) the relationship between Carbon Border Adjustment Mechanisms (CBAMs), carbon trading schemes and interconnector flows, ii) further growth of wind and solar, driving temporal net demand patterns across Europe, iii) more uncertain outlooks across Europe for coal, gas and nuclear generation, iv) very long range stability effects on the European synchronous grid, v) high uncertainty on which of the 177 potential transmission projects listed in the European Network of Transmission System Operators for Electricity (ENTSO-E) Ten Year Network Development Plan (TYNDP)[33] will get built and when, and what the flow effects will be, vi) the uncertainty in the role of hydrogen (key in TYNDP and NESO FES pathways). At the highest level it should follow that more interconnection means more total security in Europe and that more GB-Europe interconnection means more security for GB and less curtailment of renewables. What is less clear is the extent to which increased interconnection within the EU may draw power away from the GB in tight conditions under different scenarios.

81. For all of the reasons above, and some others, NESO’s ranges are very high in specifying the plausible de-rating factors for each interconnected country. We concur with NESO’s view here. The challenge, however, is that a single figure must be specified for the auction mechanism. This must be as robust as possible, which in turn requires the combination of data and expert judgement in a developed analytical framework. Furthermore, the wide ranges of uncertainty imply that evidence for substantial changes in the de-rating factors from the previous levels would require a convincing burden of proof.

82. Just as the complexity of the situation increases, the complexity of the modelling follows. This creates a tension. There will always be a relative payoff decision between accuracy and computational efficiency when modelling complex systems. NESO has faced this issue in advancing a step change in the modelling by seeking to include a new approach to the interconnector de-rating factors this year, alongside its conventional “mean flows” approach, which has been the basis of previous de-rating factors.

[32] PTE Report 2024.
[33] Further information on the ENTSO-E Ten Year Network Development Plan.

83. EFC (and its close cousin, the Equivalent/Effective Load Carrying Capacity) approaches are long established, well known and used in various jurisdictions for de-rating assets in resource adequacy assessments, as well as by NESO in the ECR for wind, solar and storage. We agree that extending the use of EFCs within and between asset classes is a good methodological principle for consistency. The PTE recognises that there are several variations in implementing an EFC approach and we encourage NESO to consider these further to achieve an appropriate balance of computational thoroughness and analytical simplification. In particular, the PTE is supportive of the direction taken by NESO, with the help of its academic consultants, to implement an analytical approach this year but regards some of the assumptions in that method needing further evidence of their robustness. An alternative EFC approach which may be computationally more intensive, but with firmer empirical support, would be more defensible.

84. We note that there are variants of the EFC approach. In particular, we are aware that marginal EFC is very different to average EFC. “Equivalent” and “effective” are not interchangeable and give different results depending on the precise definition applied. This distinction is likely to become more material in the future. However, for this year and for clarity, we have followed the interpretations used in the 2025 ECR.

85. Thus, the PTE supports the development of formal models that contend with (at least) the first order empirical relationships of interconnector de-rating factors with mean, variance and correlations of “non-flow”. Non-flow applies when loss adjusted price differentials across the interconnector are above de minimis levels and the interconnector is flowing at less than capacity. EFC models do at least capture these key first order relationships in simple form. However, the EFC models have known shortcomings, sensitivities, calibration challenges and difficult implementation choices (for example, rewarding new capacity at average or marginal EFC). To provide an empirical basis for the modelling, we suggest that NESO should undertake analysis of a recent and substantial sample of interconnector non-flows at half-hourly resolution. As far as possible these should be grouped by category (for example, internal constraints) and analysed to get the mean, variances, and average correlations of non-flows. From this empirical basis, NESO should be able to develop an approach to understanding the non-linearity of non-flow correlations.

Recommendation 104: NESO should undertake an empirical analysis of a recent and substantial sample of interconnector non-flows to GB. From this, NESO should consider constructing for key risk scenarios such as dunkelflauten, intuitive correlation matrices to inform the correlation analyses used for interconnector de-rating factors.

86. We note that NESO’s creation of the dataset for the pan-European mean flows analysis has evolved this year and we welcome the improvements. Noteworthy is the improved process by which the sample of GB tight events is stressed so that periods when GB is at 3 hours LOLE, including average interconnector flows, are created. These provide for a better dynamic representation of storage, although we recognise that further work can be undertaken on the storage dynamics. The modelling is also less restrictive than the previous practice of overstressing all the GB tight periods to the extent that GB is in

deficit despite the interconnector inflows. For this, and other structural reasons, the mean flow de-rating factors in the ECR this year are slightly higher on average than in 2024 ECR.[34] Nevertheless, the PTE notes that since the modelling for the interconnector de-rating factors is undertaken ex-post to the LWR modelling, which sets the procurement targets, to the extent that the final procurement target is generally less than the nominal 3 hours LOLE it would be more internally consistent to use a value of LOLE closer to that actually expected in GB in order to compute the interconnector de-rating factors.

Recommendation 105: NESO should consider estimating the interconnector de-rating factors more consistently with the actual, rather than nominal, GB LOLE target procurement in the ECR.

87. To further explain the adjustments in interconnector de-rating factors from the 2024 ECR, the PTE has attempted a high-level breakdown of the effects of; i) external change, ii) deeper insight in specifics and iii) model change. Examples of specifics are deeper examinations of the substance behind press reports in various countries, where the reports indicate a sensitivity of the interconnector flow to the matter reported. Disentangling the various effects from NESO's interconnector de-rating factor Base Case changes has not been easy. Noting the very wide range of uncertainties cited, as a general rule, we feel that making a de-rating factor adjustment in excess of a few percent on the basis of (ii) or (iii) in one year is unsafe. Whilst we generally accept the NESO narratives on the external changes, we consider that any substantial de-rating factor adjustments need very careful justification. Specifically, we observed that all the Base Case de-rating estimates by NESO in the 2025 ECR were above those recommended by the PTE in 2024, and in our view these required careful moderations.

88. Taking advice into consideration, DESNZ makes a final adjustment based on the technical element of the interconnector de-rating factors. There is, essentially, no clear boundary for the technical element of de-rating. Whilst the physical interconnector boundary is clear, between the points of connection of the two converters, interconnector trips and failures can be, and are, triggered by grid events. There is some risk of double counting and of missing curtailments. Some elements of technical de-rating are uncorrelated (for example, unintentional anchor drag on a cable) and some might be correlated (for example, related to live conditions on the European synchronous grid). For example, an interconnector may be working perfectly, the grids working as they should and both sides wanting to flow the power, but some technical factor relating to grid connected items causes the schedule to limit the flow across the interconnector in question. We have assumed that technical issues refer to endogenous failures, not related to grid flow, even if this flow creates technical challenges at the interconnector. Whilst all forms of curtailment ultimately find their way into modelling the de-rating factors, we maintain the principle of task separation, whereby technical

[34] Previous NESO Electricity Capacity Reports.

adjustments are the responsibility of DESNZ and should be applied after the PTE resource adequacy assessments.

89. We appreciate NESO's motivation to make significant progress in dealing with the correlation risk amongst the interconnectors. Nevertheless, we are aware that there are various ways that an EFC approach can be developed, and these will need to be investigated more fully. When it is fully implemented, a new EFC method will be a step change in the de-rating factors and the PTE have always been cautious about introducing too much year-on-year volatility in the interconnector de-rating factors, without strong evidence in support of the changes. Thus, this year we have stayed with our convention of adapting the de-rating factors gradually. We have therefore taken regard of the insights on correlation provided by the lower EFC implied de-rating factors, but, for the above reasons, we have anchored our approach on adjustments from the conventional mean flows results.

Interconnector De-rating Factors

90. The PTE is required to suggest de-rating values from within the ranges provided in the ECR. Evidently, there is no objective answer to the question of what is most likely to flow to GB on the interconnectors during a stress event and the final recommendations rely significantly on the expert judgement of the PTE, as informed by NESO's analysis. Whilst the ranges proposed for consideration by NESO are very wide, we agree that the various uncertainties noted above warrant such extremes. Therefore: i) the ranges are of limited values in specifying individual de-rating values; ii) the width of the ranges indicates that large changes are indeed possible, and iii) the width of the ranges indicates caution and the need for precise explanations in making any changes.

91. In addition to the country specifics noted below, the PTE, like NESO[35], has paid extra attention to "second order" flows between countries connected to GB, and (to a lesser extent), further ("third order", etc.) flows, especially on the north-south and east-west axes[36]. For example, these include Ireland-France, France-Belgium-Netherlands, Norway-Denmark-Sweden, and Germany to all of its neighbours. In addition, we see second order transit, such as Norway-GB-Denmark, and France-GB-France. Two-way flow is particularly important, as it implies that a country, which sometimes depends on imports, is generally incentivised to be reliable on export. Two-way flow can be diurnal (as renewable energy flows across Europe), seasonal (for example, hydro, photovoltaic), infrequent non-weather-related, episodic (for example, nuclear type faults), or weather episodic (for example, dunkelflauten, heat waves). There are clear trends for the increase in wind power (generally in north Europe and from the west) and solar photovoltaic power (generally in south Europe and from the east), but for more limited growth in hydro (generally in the north and most available in spring).

[35] S2.7 in the 2025 ECR Methodology and Assumption Book.
[36] North-South and East-West are generic themes across the world in power flow, deriving in particular from the rotations of the earth and the balance of solar and hydro resources between the equator and poles. In north Europe this is enhanced by the general flow of wind from the Atlantic.

92. For the specific countries, following the above considerations, we suggest:

PTE recommended de-rating factors by country (in %)		
Country	**2029/30** **(upcoming T-4 auction)**	2028/29 (previous T-4 auction for reference)
Ireland (SEM)	**61**	55
France	**69**	68
Belgium	**69**	68
The Netherlands	**69**	68
Denmark	**69**	66
Norway	**77**	82
Germany	**69**	66

93. In general, we concur with the high-level NESO prognoses in all countries, notwithstanding that we have advocated moderate reductions from the 2025 ECR Base Case mean estimates. But, with the exception of Norway, our suggestions remain informed by these overall Base Case increases and our final suggestions are thereby slightly higher than the 2024 PTE Report recommendations for the T-4 auction for Delivery Year 2028/29.

94. **Ireland (Island of, Single Electricity Market)**. The picture is complicated as: i) the east-west timing synergy of wind and (to a much lesser extent) sun arriving in opposite directions is not yet evident in flow reversal,[37] ii) Ireland remains constrained, with significant uncertainty on demand growth (for example, data centres, which also have the potential to improve[38] security of supply), transmission constraints of various forms, and generation build, iii) Ireland and GB have similar north-south constraints, iv) flow to and from France across the Celtic interconnector[39] under various conditions remains to

[37] We are aware of some background NESO analysis here that is very useful and we encourage more, especially with empirical data.
[38] See the update on new Electricity Connection Policy for Data Centres.
[39] From County Cork, due 2026, making a direct connection to the European Union.

be seen, v) there are various transit[40] and loop flow paths (for example, Norway-GB-Ireland, France-Ireland-GB, GB-Ireland-GB), vi) historic curtailment across Moyle, vii) non-flows[41], as the basis for de-rating factors, are awkward to estimate. A key question for Ireland is what happens in dunkelflauten conditions. The wind is lower in these conditions and, what wind there is, is generally expected to arrive in Ireland first. There is little empirical data, but it seems likely that the lag in correlation would increase under these conditions. For the de-rating factor, we have suggested a move upwards from last year's recommendation towards our European average, all of which are close apart from Norway (which is also converging to the average). As with other neighbours, inefficient coupling can increase non-flow through no fault of interconnector or SO. By the same token, more efficient coupling can decrease it. There is a further complication for Ireland insofar as the Moyle route from County Antrim to Ayrshire experiences different forces compared to the East-West Interconnector (EWIC, from Dublin to North Wales) and Greenlink (Wexford to Pembrokeshire) routes. Indeed, EWIC and Greenlink can simultaneously flow in opposite directions. It is not ideal to model them together and the flow data are per interconnector. Taking all these considerations, whilst noting that the NESO provided range of 7% to 85% and a mean Base Case of 80% in the 2025 ECR, we recommend that the T-4 2029/30 interconnector de-rating factor for Ireland rises from 55% (as recommended in 2024 for the T-4 for 2028/29) to 61%. This 6% rise is approximately evenly attributable between model effects, insights and changes.

95. **France**. France is multi-connected, which has the effect of aligning its de-rating factor to its neighbours. Since the interconnector capacity to GB is high, this gives it a high weighting in the correlation matrix,[42] driving down the de-rating factor. We have taken this into account. Nevertheless, the recommended net rise from 68% last year to 69% this year is predominantly accounted for by external change. Whilst the model change generally increases de-rating factors, it is possible that further data analysis may show that the non-flow correlations for France are higher than indicated in the correlation matrix. An emerging question is that of extremely hot summers in France and their consequent impacts on cooling restrictions for French nuclear output: the conventional view has been that summer scarcity in GB is not usually remedied by more GB procurement, but that may need to be reconsidered in the future.

96. **Belgium**. We usually set the de-rating factor to be similar to France and Netherlands, without the downward correlation weighting adjustment applied to France. Belgian policy is leaning towards nuclear, with Doel 4 and Tihange 3 having life extensions. Belgium has a relatively high dependence on imports. In stress conditions it would compete with GB for imports from France, Netherlands and Germany. If there is curtailment then we may expect the first curtailments to be loops and transits, in this case exporting to GB electricity that was imported from neighbours. In Belgium the LOLE standard is 3 hours

[40] Note the GB benefits from transits within continental Europe.
[41] A precise estimation is not possible, for example different auction times mean that prices cannot be compared precisely, Euphemia schedules do not always flow in the direction of low to high prices, the interconnector might not flow to the maximum capacity even if not curtailed, etc. Thus, expert judgement needs to be applied for specifics.
[42] Please see Figure 15 in the NESO 2025 ECR Methodology and Assumptions Book.

and the ENTSO-E European Resource Adequacy Assessment (ERAA) indicates LOLE rising from 4.7 hours to 6.1 hours in 2025-30.[43] The PTE recommend a rise from 68% to 69%, predominantly accounted for by external change.

97. **Netherlands**. As with all countries, energy policy is evolving, and the energy mix with it. For the de-rating factor, we place Netherlands on the France-Belgium-Netherlands-Germany corridor and hence weight the de-rating factor closer to Germany than France. An uncertainty in the Netherlands is the situation with hydrogen. Their hydrogen strategy affects interconnector flows in a number of ways. For example: i) capacity dedicated to electrolysers for stored hydrogen can become spare capacity in tight energy situations, ii) the OCGT landscape changes in terms of build, convert, run, and endure for the longer term. The success, or otherwise, of the hydrogen initiative may play a significant role across the European capacity mechanisms. One way, for example, is the effect on LOLE from the higher CONE noting that we would expect a higher CONE figure than that used by DESNZ. Another effect is the potential for gas turbines to be an enduring rather than declining source of peak synchronous power with inertia. At this point in time, there does not seem to be sufficient indications for the hydrogen evolutions to push the Dutch interconnector de-rating factor in either direction. In the Netherlands, the rise in LOLE from below the 4-hour standard is in part a modelling change and hence no trend conclusion can be drawn. The recommended rise from 68% to 69% is predominantly accounted for by east-west flow aligning to the French and German de-rating factors.

98. **Denmark**. Danish flows are closely connected with those of its neighbours and the relationships with the neighbours. The route from north Norway to South Germany remains constrained at several points, with various resolutions at various times. We have seen GB simultaneously importing from and exporting to Scandinavia. The recommended rise from 66% to 69% is accounted for approximately evenly by proven flows and by aligning east-west and north-south flows to the French and German de-rating factors.

99. **Norway**. In general, we concur with the NESO prognosis, although we are more cautious about the consumer support schemes,[44] as less responsive demand may draw power to Norway in stress conditions. As with NESO, we generally expect the least non-flow correlation of all the interconnectors, although the picture is complex (for example, pan-European shortage pulling power south to Europe rather than west to GB, but a possible correlation lag benefit with GB). Over the longer term, more power from North Sea wind preserves water in Norway which in turn can be used (and monetised) as a peak rather than bulk resource. Whilst the long-term trend towards a potential 150 GW in the North Sea appears to remain positive, the trend in the last year within the T-4 auction timeframe has been negative. For example, we see the cost increases and

[43] ERAA - European Resource Adequacy Assessment.
[44] These have various phases but are broadly similar in effect, which is state support for increases above the hourly price index above a certain level. For a given structure of price elasticity of demand, a reduction in effective price experienced by consumers reduces the demand response. This in turn has the effect of making export less available in times of high prices in Norway.

delays in wind projects, and pivots to oil and gas. However, we do not consider that the de-rating factor to Norway merits being a high outlier. This year, we have therefore recommended a reduction towards our European average. Following the principle of caution on large changes to de-rating factors in any one year, there is to some extent a catch up of this de-rating factor trend if the views of the previous year are confirmed. This is another reason for a slight reduction in the Norway interconnector de-rating factor. Broadly speaking, efficient international flow should reduce the effect of constraints within Norway. The recommended fall from 82% to 77% is explained by alignment to neighbours. Whilst we recognise the low correlation of Norwegian energy to its interconnected neighbours, this was already taken into account in 2024. In the future, the PTE believe that it will be particularly important to analyse Norwegian interconnector flows in relation to price differentials.

100. **Germany**. NESO presents a compelling picture of the relationship between German wind output (predominantly onshore, with a higher density in the north) and an approximate 14 GW interconnector flow swing. The PTE considers the position for Germany is comparable to other countries described above. For example, more wind-photovoltaic flow tension, more north-south reinforcement and build, more pan-European flow generally, and numerous constraints. In particular, following the completion of the nuclear phase-out in 2024, from 11 GW in 2015, the energy outlook in Germany is in flux. As with France, Germany is a key country in setting the norm for continental de-rating factors. We do not consider that enough has changed physically since 2024 to make a large change to its de-rating factor. The recommended rise from 66% to 69% is attributed approximately evenly between deeper insights on north-south and east-west flows, alignment between neighbours and the general increase in the NESO Base Case interconnector de-rating factors arising from the modelling changes.

Overall Considerations

101. The existence of multiple interconnectors per country presents a need for greater precision in the modelling. As noted above, interconnectors can simultaneously flow in opposite directions between country pairs. This can be effective in resolving intra-country constraints.

Recommendation 106: The modelling of de-rating factors should be specified for individual interconnectors (as per PTE 33)[45] even if subsequently grouped by country

102. This has been an especially challenging year for the interconnector de-rating factor modelling. The PTE considers that specific scenarios need focussed and detailed analysis to understand the likely European flows and associated behaviours. Some examples would be: a sustained hydro shortage in Norway, generator type faults, reduced gas inflow to Europe, stored gas depletion, dunkelflauten by depth, duration and scale, pan-European cooling water challenges for thermal plant, high demand peak in GB, sustained pan European heat/cold, or widespread interconnector curtailments.

[45] PTE Report 2017.

The relative paces of European grid stability challenges, and resolution of these, remain uncertain, as do their effects on GB. However, GB has no AC interconnection and the DC links act as a buffer to resilience issues elsewhere. Thus, for example, we have not reduced the interconnector de-rating factors from the 2025 Iberian event.

103. PTE recognises that NESO has required specialist input from Baringa, since the information from, for example ENTSO-E data, is not sufficient for the full modelling needs of NESO. One important factor is that the Loss of Load definition in the EU meansconsumer lost load. [46] This differs to the GB Reliability Standard in the 2014 regulations for the ECR which relates LOLE to the need for SO mitigation actions. Hence some adjustment must be made. Being oriented to stress conditions, the interconnector de-rating factors are very sensitive to precise definitions and expectations of lost load. We recognise the argument that tight European standards (i.e. low LOLE) might improve GB security and increase interconnector de-rating factors. However, more detailed examination is required as, for example, curtailment to GB may be something that enables a neighbour to acquire a lower LOLE.

104. The role of storage is very important to interconnector flow. Storage acts to absorb the volatility of renewables. In general, this smooths diurnal macro flow. In addition, there is an increasing seasonal effect with photovoltaic flow north in winter. Furthermore, the movement of wind eastwards in north Europe and the sun moving westwards form peaks that can be resolved either by storage or by interconnector flow. Hence if transmission build increases and storage capacity increases, the interconnector de-rating factors should rise. There may come a point where there is so much interconnector capacity that its incremental value is minimal, but we are not at that point and the EFC model will contend readily with this in due course. Conversely, if the development of renewables runs ahead of the ability to contend with peaks and troughs then interconnector de-rating factors should fall. At this point in time, it seems as if photovoltaic and storage will continue to be built at pace. We probably can at least say that downward pressure on interconnector de-rating factors seems relatively unlikely. A consideration for storage systems and inverter-based resources with storage is the development of power electronics. This is moving positively within T-4 auction delivery timeframes. We can perhaps be optimistic that grid stability functionality will increase within T-4 timeframes in a manner that increases interconnector de-rating factors. At this point in time we have not taken this factor into account.

105. The problems of dunkelflauten remain of substantial concern. Broadly speaking, in a sustained dunkelflaute, leading to a major pan European energy shortage, we might expect high curtailment. The tighter the LOLE standard, the greater the effect. Modelling this as possibly the most important risk scenario seems to be important. Some wind is very different indeed to no wind. With some wind, there may be a strong incentive to

[46] There are some signs of drift towards the UK definition, which includes specified events that do not result in consumer lost load. The European Agency of Cooperation of Energy Regulators (ACER) may or may not formalise this in its next formal guidance.

maintain interconnector export even when shedding load because import a few hours later can then be secured.

106. Finally, the Capacity Market under its current design was determined in 2013/14. This design is broadly oriented to the thermal paradigm with dispatchable power, variable inelastic demand, and limited subsea interconnections. Both analytics and mechanism have been robust and Europe has progressively dropped its objection in principle to capacity mechanisms, making them widespread, harmonised and enduring. The result has been a policy success. However, much has changed. In particular we see: i) the paradigm shift to renewables and the necessary accommodation of the demand/storage complexities to accommodate this, ii) the development of long distance macro flows of photovoltaics/wind/hydro/nuclear, iii) a huge growth of photovoltaics with highly varying outlooks for wind/hydro/nuclear, iv) the increasing harmonisation of electricity markets in Europe, both internally and between neighbouring European states, and, v) an uncertain outlook for resilience in a system with low inertia, low synchronous power and the increasing role of DC. We note that NESO is in the vanguard of contracting for resilience, for example in inertia, fault currents and grid forming.

107. There are reasons to be confident that resilience solutions will catch up with necessity. Resilience problems amongst interconnected counties can affect resource adequacy for GB. Whilst the Iberian blackout indicates resilience challenges, there are reasons to be hopeful that these will get resolved and that, in the interim, there is sufficient ballast in synchronous power across the GB neighbours for the GB to be relatively insulated. However, looking through the specific lens of de-rating factors of interconnectors unbacked with foreign capacity, we expect the analytic challenge to get even harder. The future interconnector de-rating factors will be highly sensitive to several potential design developments of the capacity mechanism in GB, and indeed similar mechanisms in Europe. Analytic developments for the interconnector de-rating factors will then necessarily orient towards the direction of travel of capacity mechanism design. Given that, in the default market design, the interconnector de-rating factors should ideally be 100% minus relatively small technical fail-rates, there are reasons to believe that they will rise.[47] But, as of 2025, the PTE does not have any evidence to factor this in. It is possible that by 2026 it may become clearer. Put simply, there is a virtuous circle: a high interconnector de-rating factor ideally indicates i) high need and high reliability from the system operator perspective and ii) high revenue and incentive for reliability from the interconnector perspective. These are enhanced by a close relationship between interconnectors and SOs.

108. Based on various aspects from the above observations we suggest various modelling elaborations which could facilitate more precise specifications of the interconnector de-rating factors.

[47] A significant caveat is that there is diminishing marginal benefit of increasing interconnection. A de-rating factor mechanism change, for example to marginal equivalent capacity would have a significant effect on de-rating factors for new and/or CM uncontracted interconnectors. This has *not* been taken into account in the 2025 ECR.

Recommendation 107: NESO should consider in more detail the relationship between interconnector de-rating factors and; i) the diurnal country demand profiles and the evolving role of DSR, ii) the installed storage fleets with profiles of their durations, iii) lagged correlations of residual demand between GB and neighbours, iv) the potential effects of greater use of voltage reductions (for example, flattening the peak to the trailing edge), which could all affect interconnector flows.

109. In terms of actionable outcomes, these are predominantly data gathering and analysis (i-iii), and “what if” analysis (i and iv).

Methodology

110. The PTE has always made a number of recommendations in its previous reports. Last year's (2024) PTE report made 12 new recommendations. All these recommendations, along with others raised by DESNZ, Ofgem and through NESO's internal review processes were considered by NESO (or National Grid ESO, as they were then known). Below we summarise our comments upon how these 12 PTE Recommendations have been developed.

PTE #	PTE 2024 Recommendations	Progress and PTE comments
82	ESO to make use of available smart metered and other relevant data, such as from DNO sources, to improve how the modelling reflects the evolving load shape.	The peak day residential demand profile is now informed by half hourly smart metered residential demand profiles, weather correction factors, and other data. NESO have developed new heat and residential transport demand profiles.
83	ESO should consider distinguishing between implicit flexibility (where demand response is achieved through tariffs) and explicit flexibility (where demand response is achieved through products) when modelling peak demand.	NESO provided clarification to the PTE around the implicit and explicit elements of DSR assumptions. Nevertheless, we consider a more formal representation of this needs to be made explicit in future ECRs.
84	ESO should strengthen the analysis in the bottom-up model of peak demand by improving the estimation of sectors' contributions to overall and peak demand.	We understand this is on-going.
85	ESO to continue the work on how changes in the drivers of peak demand affect uncertainty analysis around the Base Case.	NESO have improved peak demand uncertainty modelling for the 2025 ECR, focusing on improved estimates of uncertainty in peak losses and industrial and commercial peak demand.

86	ESO to continue the work started with PTE 61 to characterise more fully the empirical evidence on non-deliveries and non-availabilities.	Lower priority - deferred to a later date.
87	ESO should explore means to update to the Capacity Market Registers to include storage durations, for example by making more use of the post auction reports.	NESO have reviewed this recommendation and have been supporting the EMR Delivery Body in discussions in the Capacity Market Advisory Group (CMAG) on potential changes to the Capacity Market Rules relating to data on storage in the Capacity Market Registers.
88	ESO to consider the volume and location of storage with non-firm network access and the probability of it being constrained off in certain types of weather events.	Lower priority - deferred to a later date.
89	ESO to provide a more explicit report on whether the potential for congestion across the networks will create material issues, in terms of volume and technologies, for resource adequacy at stress periods.	Lower priority - deferred to a later date.
90	ESO to advance the important work on PTE63 related to de-rating factors for Demand-side Response.	NESO have provided input into a DESNZ call for evidence on DSR which included proposals relating to DSR de-rating factors.
91	ESO to advance the important work on PTE53 related to improved data resources for distributed generation.	Progress is being made with the DNOs.
92	ESO to continue the analytical and computation work on PTE78 related to the interconnection fleet risk and its implications for the procurement targets.	Substantial progress on this is described in the 2025 ECR using an approximate method for computing the fleet EFC. This will be developed further next year.

93	ESO to continue the conceptual work on PTE79 to develop the finer details of how a hybrid LWR and stochastic framework can be implemented.	This follows on from the capacity to secure vision project (PTE79) described in the 2024 ECR. An update on this was provided to the PTE in the autumn, but progress since then has been limited due to a lack of available resource due to policy work being prioritised ahead of modelling improvement projects. NESO intend to progress this project again after the 2025 ECR if / when resource becomes available.

111. As many of the previous recommendations beyond 2024 are still work-in-progress, the PTE would like to re-affirm the importance and priorities that should be given to some of these, particularly PTE63[48] related to de-rating factors for DSR and PTE53[49] on improved data for embedded resources, as mentioned earlier in this report. We recognise that these initiatives may also require government and regulatory commitments. In contrast we note that NESO have undertaken further work on PTE67,[50] Price Elasticity of Demand, and changed assumptions for batteries and heating flex at peak based on updated data. Regarding PTE80, the future contingent T-4 auction procurement, NESO recognise that there are potential advantages in considering future contingency requirements beyond T-4 auction timeframes given the uncertainty in new technologies, growth in demand and potential for disruption as the energy system decarbonises. The PTE set out their view in PTE80 of the 2023 report.[51] As a result, in the 2024 ECR,[52] NESO provided an early, indicative view of the T-5 to T-8 requirement and they have used the same in the 2025 ECR, meaning that this view is indicative rather than intended to inform decision-making. The PTE is pleased to acknowledge that NESO has secured additional resources to enhance the robustness of the modelling on the T-5 to T-8 requirements in future ECRs, associated with a deeper analysis of the supply-side risks.

112. Regarding PTE78[53] on the aggregate fleet risk from interconnectors, the new insights from this more explicit modelling of correlated flows is insightful and creates a serious concern about the impact to GB of pan-European stress. PTE considers that more analysis is required. The GB stress events necessarily have to be artificially created in the modelling but, nevertheless, as noted in the Interconnection section previously, it would be important to understand more about the likelihoods and characteristics of these stress events as well as further empirical evidence on historic

[48] PTE Report 2021.
[49] PTE Report 2020.
[50] PTE Report 2022.
[51] PTE Report 2023.
[52] PTE Report 2024.
[53] PTE Report 2023.

interconnector non-flows. This would give a view on the degree of risk involved. We suggested in 2024 that more conceptual analysis may be required to develop an alternative, forward-looking and more appropriate set of stress events from which to base the average de-rating factors appropriate to meeting the Reliability Standard and we have reaffirmed that view in the interconnector section of this report.

113. Regarding PTE79[54] related to the vision of a hybrid LWR and stochastic risk analysis, the PTE is concerned that in the transition towards a more distinctive methodology, there are some modelling risks of double-counting risk and circularity in uncertainty assessments. The essence of the vision is that elements that can be estimated statistically (demand, outages, weather) should be expressed as distributions, whilst special event risks (for example, major non-deliveries, Base Case alternatives) should remain in the LWR or treated as distinct scenarios for stress-testing. The expectation is that the number of LWR alternatives will be fewer and that the overall analysis, as a consequence, becomes less discretionary. This year, the inclusion of a risk premium in the T-1 procurement target is indicative of the limitations of the LWR approach and will most likely be a precedent for a modelling transition away from an emphasis upon LWR towards an increased emphasis upon stochastic simulations around the Base Case, with a more formal approach to a LOLE risk premium that is in line with the established preference of DESNZ. There are increased challenges in moving into this modelling framework and it may require a more computationally intensive modelling capability to both integrate the Dynamic Dispatch Model, Unserved Energy Model and pan-European models currently in use and to facilitate more complex simulations. Many of the elements are not independent, but at this intermediate stage of development, they are treated as independent. This introduces error into their combined risk implications and suggests that moving towards a less ad hoc mixture of methods should be a priority.

114. NESO's modelling does not include the various internal network constraints which have been observed to limit the operation of generators or interconnectors. This has been raised several times by the PTE and past reports have noted: i) The use of interruptible connections for both generation and demand is increasing, ii) Co-location means that installed capacity is diverging from deliverable capacity, and iii) Boundary constraints on the transmission network are now more active. Historically the view has been taken that, in a stress event, the impact of constraints will be limited, if not non-existent. This will depend on the nature of the event and the constraints at the time. Thus, it is possible to see an interconnector being constrained down, or wind in Scotland being constrained off, when say a cold weather event is occurring across Europe. While this could be seen as verging on a black swan event, it also needs to be recognised that NESO is now regularly reporting at its weekly transparency meetings on 11 boundaries that can impact energy flows and balancing costs. The PTE considers that its previous recommendations PTE 69[55] and PTE 88[56] should be reconsidered and

[54] PTE Report 2023.
[55] PTE Report 2022.
[56] PTE Report 2024.

NESO awareness maintained for the impact of internal constraints not only with respect to the GB LOLE but also the interconnector de-rating factors.

Conclusions on Target Capacities

115. Overall, we note the continued improvement in methodology for producing the ECR and whilst we have, as usual, presented a number of recommendations, we hold the opinion that the work is comprehensive and thoroughly undertaken.

116. We have considered the target capacity recommendations by NESO and make the following recommendations:

- Regarding the T-1 recommendation by NESO of 5.8 GW in the 2025 ECR, we are comfortable with the analysis and the inclusion of a 0.4 GW risk premium above the LWR results to maintain a level of risk aversion consistent with previous Secretary of State determinations. This procurement includes a substantial provision for expected non-deliveries and, as usual the PTE would suggest an autumn review with respect to new information, particularly on non-delivery risks.
- Regarding the T-4 recommendation by NESO of 40.1 GW, whilst we agree that this is appropriate according to the analysis in the 2025 ECR, we have been inclined to suggest that DESNZ may be able to use internal information sources to consider whether an additional small risk premium needs to be included to cover a number of uncertain elements on the supply side which are not explicitly modelled, such as the logistics of refurbishment, connections and possible non-delivery of CfD projects, as well as the increasing demand uncertainty which presents substantial model risk. The Secretary of State could choose to make this adjustment in the Autumn.

Quality Assurance

117. Previously followed procedures continue to provide quality assurance (QA) and these are closely aligned with DESNZ internal QA processes. The PTE previously requested details of the ECR Quality Assurance methodology and this was reproduced in Annex 2 of PTE's 2016 report.[57]

[57] PTE Report 2016.

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