

Resource adequacy in the 2030s

Planning for further studies

July 2023



Introduction

We published our first Net Zero Resource Adequacy [study](#) in December 2022 in collaboration with AFRY. This study set out to:

- assess the risks to electricity security of supply in the 2030s, when the power system is expected to be fully decarbonised.
- identify the resources needed in the capacity mix to mitigate these risks and ensure adequacy.

Following publication, we invited feedback from expert stakeholders, through in-person and virtual round table debates, as well as bilateral discussions earlier this year. Overall, we received input from over 40 individual stakeholders.

Since then we have built a new Net Zero Adequacy modelling team in the ESO and begun deploying our new model (PLEXOS) to prepare for further studies.

We have also been reviewing the stakeholder feedback and using this to consider how we develop this work over the coming months. This is set out in this short update.

We continue to welcome stakeholder input and feedback to our work in this area. If you would like to contribute or would like more information, then please contact us at: Box.NetZeroAdequacy@nationalgrideso.com

Resource adequacy next steps

1

Our next Resource Adequacy study

We are working to produce our next Resource Adequacy study in summer 2024 and we are currently looking at options to publish it between July and September 2024.

2

Spotlights

We are intending to produce a set of shorter 'spotlights' ahead of next year's full study focussing on some of the priority areas and themes from the feedback sessions.

3

Expert advisory group

We are looking to set up a small expert advisory group to help us develop this work. We are now inviting nominations with a view to have the group in place by this autumn. Further details are set out in this update.

Resource adequacy next steps

1 Our next Resource Adequacy study

We are currently working to produce our next study in summer 2024, with potential publication date between July and September 2024.

The objective of this study will be to identify the resources needed to ensure adequacy in a fully decarbonised power system, and whether an optimal portfolio of resources exists. It will incorporate improvements that build on the work we have already done, reflecting stakeholder input, considering different portfolios across a range of scenarios.

The outcomes of the study could potentially lead to us making recommendations on the future resources needed, coinciding with our transition to the Future System Operator, and our new role in coordinating strategic planning for the whole energy system. We will be striving to ensure that the outcomes are robust such that it can support development of policy and investment in the GB energy system.

2 Spotlights

We are intending to produce a set of shorter ‘spotlights’ ahead of next year’s full study. We expect them to focus on some of the priority areas and themes from the feedback sessions. This will help us continue to engage with stakeholders as we develop the modelling for the next study.

Details of the topics of these studies and when we will produce them are not yet confirmed, and may depend on how well we continue to build our in-house modelling expertise and when new data inputs become available. However, based on stakeholder input, we have identified the following as potential candidates for spotlights:

- What are our technology assumptions (including cost assumptions) and how ready are they to be deployed?
- What is the role of demand-side response in adequacy, and what assumptions are we relying on?
- What are the appropriate metrics for assessing adequacy risks in a fully decarbonised power system?
- How would different levels of interconnection affect the portfolio of resources needed?
- How would different market arrangements affect the portfolio of resources needed?
- What is the impact of network constraints on adequacy?
- How do we reflect risks due to previously unseen, and potentially more extreme, weather patterns?

It is unlikely that we will be able to produce a spotlight on each of these, and some may not be included until next year’s full study.

3 Expert advisory group

We are looking to set up a small expert advisory group to help us with this work. We want to use this group to help us develop and challenge the assumptions and methods used in our work.

We envisage that this group could meet virtually for around 90 mins every two months. We want this to be a combination of reviewing our work in advance of discussions and providing objective input on alternative assumptions or methods. This could include: adequacy modelling methods, assumptions for new technologies including costs, development of potential scenarios to consider including weather.

We are looking for a group of around 10 – 20 experts representing a diverse range of views, backgrounds and interests. We would like to invite nominations from those interested by emailing us at: Box.NetZeroAdequacy@nationalgrideso.com with a short note covering the expertise you will bring to the group, indication of the amount of time you are able to commit and whether you would have a suitable alternative to delegate to if you became unavailable. We would like all responses by Friday 8 September 2023.

Reflecting on stakeholder feedback

Feedback from expert stakeholders has been highly valuable in helping us to shape how we develop this work in the coming months. While we received feedback across a broad range of areas on the first study, feedback on three areas in particular stood out as top themes. These were: demand-side response, extreme scenarios including weather and the impact of network development on adequacy. We have summarised the feedback on these top themes and other areas in the table below. We have summarised the feedback as a set of questions, which we can look to address in our next Resource Adequacy study and / or the aforementioned spotlights.

Demand side response (DSR)	<p>The first study assumed high levels of DSR based on those in the Future Energy Scenarios, but what is the role of DSR in adequacy and what assumptions are we relying upon?</p> <p>What types of DSR in terms of the size, duration and frequency of the response is needed?</p> <p>How would the resources in the different portfolios change if we use different assumptions for DSR?</p>
Extreme scenarios and weather	<p>How do events like wind drought, Dunkelflaute and extreme summer heat in both Great Britain and Europe impact adequacy?</p> <p>How do we assess risks due to previously unseen, more extreme weather patterns? How does it impact availability the different technologies?</p> <p>How does climate change impact the magnitude and frequency of extreme weather events?</p>
Network development	<p>The first adequacy study didn't assess the impact of network constraints. Given that we expect significantly more renewables on the system by 2035, what is the impact of network constraints on adequacy in the 2030s and can we consider this through a zonal model for Great Britain?</p> <p>The first study assumed over 20 GW electricity interconnection with Europe by 2035. GB currently has 8.4 GW interconnection with a further 4.7 GW committed. How would the resources in the different portfolios change for different levels of interconnection?</p>
Other areas	<p>What are the alternatives to Loss of Load Expectation (LOLE) as a metric for monitoring security of supply?</p> <p>What is the optimal mix of technologies and how certain can we be in order to be confident of the soundness of investment decisions now? How would various storage technologies impact the adequacy? What assumptions are we making for emerging technologies?</p> <p>What is the impact of uncertainties and stochasticity in various parameters like fuel price or outages on resource adequacy and total economic costs?</p>