SOLAR ENERGY UK BRIEFING

# Clean Power 2030: Making the most of solar

November 2024

## Executive Summary

The advice provided by the National Energy Systems Operator (NESO) on how Government can reach its clean power mission has considerably underestimated the role of solar, in part due to outdated assumptions as well as not factoring in the impact of Government's planning reforms and "rooftop revolution".

Their advice recommends a very conservative figure of 47.4GW by 2030 in both scenarios. For context, our most conservative projection by 2030 would be 50.4GW, with an ambition up to 59GW if some key policy barriers are addressed through the forthcoming Solar Roadmap.

Due to the pace of solar deployment, and the way in which Connection Reform proposals are being designed, NESO's low solar figure could act as a cap, nationally and regionally. This would harm the investment case for British solar, and unnecessarily slow the march to clean power by 2030. We are asking that Government uses the most up to date market assumptions for solar, sets a target range of 50-60GW in the Clean Power 2030 plan and ensure any associated grid connections reforms do not threaten viable, consented solar projects or the growing market for rooftop solar and onsite batteries.

## NESO Scenarios

The Clean Power 2030 advice put forward to Government is split between two pathways, both needing greater electrification across the economy:

- 'New Dispatch': lower level of renewables, more gas CCS/hydrogen and nuclear.
- 'Further Flex and Renewables': Faster deployment of renewables and energy storage, no new dispatchable power.

Realistically, there will be a middle ground, but the report's scenarios provide a range for technologies depending on the scenario:

| *Source* | *New Dispatch* | *Further Flex & Renewables* |
|---|---|---|
| Offshore Wind | 43.1GW | 50.6GW |
| Nuclear | 4.1GW | 3.5GW |
| Gas CCS/Hydrogen | 2.7GW | 0.3GW |
| Batteries | 22.6GW | 27.4GW |
| **Solar** | **47.4GW** | **47.4GW** |

The primary issue we have with this figure, is that it is based on an incorrect assumed starting point of 15.1GW (a figure from 2023), whereas our data shows the true figure of solar in 2024 to be closer to 20GW.

Secondly, there is also a concerning lack of clarity regarding rooftop solar. There is seemingly no consideration of plans for the Government's "rooftop revolution" to boost solar generation on houses and businesses, such as the Warm Homes Fund, role of GB Energy and Local Power Plan.

Thirdly, the regional breakdown of solar in the NESO Scenarios does not reflect where actual projects are already being developed, with community consent. Such regional 'caps' could result in the industry being asked to build solar in places which are not commercially viable, are constrained by grid or where appropriate land is not available.

Finally, given that solar is acknowledged as one of the cheapest sources of electricity in the advice, that it is an established, popular technology, and can be deployed quickly, we do not understand giving solar the same figure for both scenarios.

## Industry's Scenarios

Based on our data, and ongoing engagement with 400+ members, we have made our own projections based on the following facts about solar in 2024:

- 20GW existing capacity – 11.5GW of solar farms, 8.5GW of rooftop solar
- 3GW of solar farms in construction
- 11GW of solar farms have planning consent
- 1GW Rooftop deployment of in 2023 and 2024

These assumptions have now been shared with the Government and NESO via the Solar Taskforce, set up to acknowledge the need to speed up deployment of solar on rooftops and at utility scale solar farms.

**Low solar scenario assumptions**

- All consented solar farms are built in standard timeframes
- No projects currently seeking planning consent are built
- A moderate 10% year on year growth in rooftop solar

Output: we forecast that there will be 50.4GW of solar in 2030.

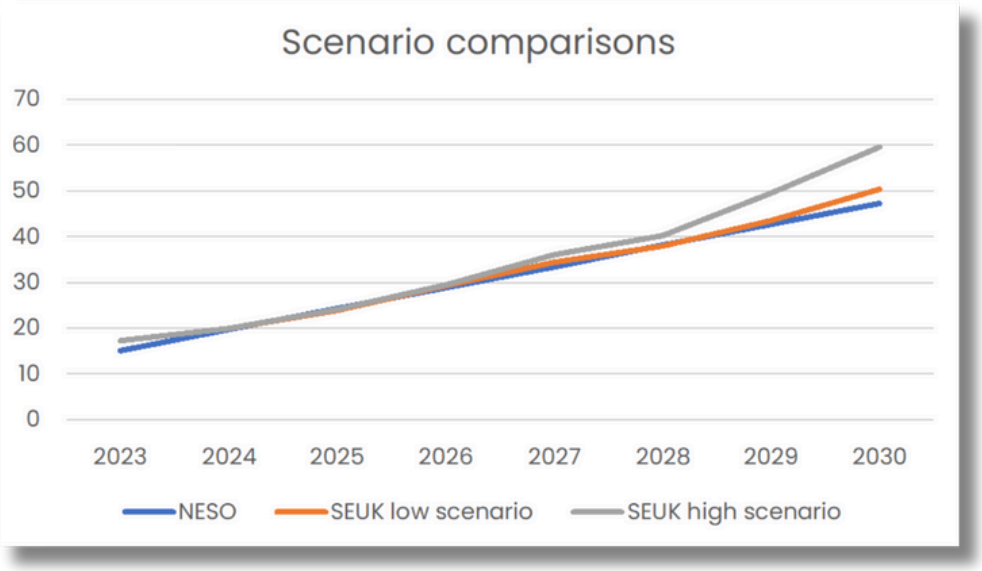
**High solar scenario assumptions**

- Government's planning changes have the desired effect of speeding up infrastructure consents
- 50% of projects seeking approval are built
- Rooftop revolution boosts rooftop growth to 20% year on year

Output: we forecast that there will be 59.6GW of solar in 2030.

**Comparison**

Our assumption based on the more accurate data demonstrates that even allowing for no major growth in solar from forthcoming policy changes still outperforms both of the NESO's projections.




We have also commissioned system modelling from Durham Energy Institute on their digital twin of the UK power network of our scenario, coupled with faster deployment of residential batteries.

| | *NESO Baseline* | *NESO Further Flex & Renewables* | *NESO New Dispatch* | *SEUK High Scenario* |
|---|---|---|---|---|
| Offshore wind | 14.7 | 50.6 | 43.1 | 46.9 |
| Onshore wind | 13.3 | 27.3 | 27.3 | 24.6 |
| Utility Solar | 10 | 31.6 | 31.6 | 40 |
| Rooftop Solar | 5.1 | 15.8 | 15.8 | 20 |
| Nuclear | 6.1 | 3.5 | 4.1 | 4.1 |
| Biomass | 4.3 | 4.0 | 3.8 | 3.8 |
| Gas CCS/H2 | 0 | 0.3 | 2.7 | 0 |
| Unabated gas | 37.4 | 35 | 35 | 35 |
| LDES | 2.8 | 7.9 | 4.6 | 7.9 |
| Utility batteries | 4.7 | 27.4 | 22.6 | 27.4 |
| Interconnectors | 8.4 | 12.5 | 12.5 | 12.5 |
| Distributed flex & BTM batteries | 2.5 | 11.7 | 10.4 | 31 |
| Annual demand (TWh) | 258 | 287 | 287 | 287 |

The results showed the SEUK Scenarios compared to both NESO Scenarios, could cut the amount of high carbon thermal generation needed by 2030, lower the overall energy costs by 12% and reduce unnecessary curtailment of wind generation through more efficient use of energy storage.

| *2030 Outcome* | *NESO Further Flex* | *NESO New Dispatch* | *SEUK High Scenario* |
|---|---|---|---|
| Carbon intensity (gCO2/kWh) | 24 | 26 | 20 |
| % with gas generation/year | 15.4% | 39.7% | 12.3% |
| % with biomass gen/year | 23.4% | 24.1% | 18.5% |
| System costs £/MWh | £133 | £126 | £117 |
| Renewables curtailment or export (TWh) | 45.3 | 36.3 | 38.1 |

## Clean Power 2030 and Grid Connection Reform

The issue with NESO's advice is that it is happening separately, but alongside the grid connection reform process. If they go ahead with only seeing 47.4GW solar as necessary to reach clean power by 2030, then there is a major concern that this figure, which as can see is conservative, will serve as a de facto cap on solar in Great Britain.

We entirely agree that the grid connections process must change – projects end up stuck in a queue for at least five years. However, Government must not allow network operators to punish clean power generators purely based on the source of their clean energy.

## Rooftop Solar & Incoming Policy

Following the election in July, Government announced its plans for a 'solar rooftop revolution'.

A large part of delivering this would be through the Future Homes Standard including solar on new homes, solar on public buildings, retrofitting solar through the Warm Homes Plan.

These welcome measures will help reduce energy bills for families and businesses, and reduce household carbon emissions.
However, NESO's report does not appear to account for this expected growth of rooftop solar generation.

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