



POWERBOOK

**A PLAYBOOK
FOR ENERGY SECURITY
BY 2030**

Sam Dumitriu

ENDORSEMENTS

“This is exactly the kind of ambition we need to drive towards clean power by 2030. It can lower bills, make us more energy secure, create jobs and once again show global climate leadership. I urge all those serious about the green transition to show the scale of vision contained in this document. I look forward to building the broadest coalition to make it happen.”

Rt Hon Ed Miliband MP
Shadow Secretary of State for Climate Change and Net Zero

“The Powerbook is a serious guide to the decisions we need to realise the vision of the UK being a net energy exporter by the 2030s. From creating a one-stop shop for planning decisions to curbing the risk of judicial review, it’s full of bold but deliverable recommendations. When I was a minister, this was precisely the kind of go-to tool I was looking for, and I hope the Government will seize on it and commit to urgent action to make the UK safer, greener and more successful.”

Rt Hon Simon Clarke MP
former Secretary of State for Levelling Up, Housing, and Communities

“Every day I meet with innovative, dynamic companies based all around the UK which are keen to invest billions in new onshore and offshore wind, solar and energy storage projects. But they’re being held back by the glacial pace of the current planning system and waiting for years before they can get a grid connection for each new project. The Powerbook sets out a series of key measures to break these log-jams which should be implemented as fast as possible, so that we can scale up to meet our climate change goals. These steps would help us to deliver tens of thousands of new green jobs and attract billions in private investment over the course of this decade, as well as enabling Britain to become a net exporter of energy in the years ahead.”

Dan McGrail
CEO, Renewable UK

“As Britain Remade rightly identify, we can’t meet our environmental obligations or face the challenges and opportunities of net zero without sufficient energy infrastructure. And at a time of acute concern over energy security, it has become far too difficult to build what we need and to do so quickly. Among the recommendations in this timely and ambitious report there are several that could really help break this gridlock.”

Andy Street
Mayor of the West Midlands

“The case for investing in secure, predictable, renewable energy has never been clearer – both for our economy and for our planet. While it is undeniable that Putin’s murderous invasion of Ukraine has intensified the uncertainty of energy security in this country – we know there are factors at play that are within our control too. I believe that, with the right ambition, and political will, we can capitalise on our natural assets and capabilities to ensure that our residents will never again have to face the soaring energy prices that we have seen over the last year. This report sets out a clear path for this ambition to be met and for the UK to be energy secure by 2030.”

Steve Rotheram
Mayor of the Liverpool City Region

“If the UK is to become an energy independent nation and step up to the challenges of reaching Net Zero, we need to reset how we go about implementing policy so that it is fit for the future. The Powerbook provides a timely diagnosis of the issues that are currently holding UK nuclear deployment back, and presents a helpful roadmap on how to overhaul this so that we can take advantage of the wide-ranging benefits small modular reactors will bring to the UK’s energy mix.”

Alastair Evans
Director of Corporate and Government Affairs at Rolls-Royce SMR



INTRODUCTION

The consequences of Britain's energy insecurity are impossible to miss. Russia's invasion of Ukraine has led to surging energy bills, massive public spending, and the sharpest fall in living standards since records began. In other words, we have allowed ourselves to get into a position where events completely out of our control can create economic chaos and push households to the brink. The Powerbook's objective is simple: make sure this never happens again by making Britain fundamentally robust to external energy shocks.

The current state of affairs was not inevitable, but a result of political choices. Britain split the atom and built the world's first commercial nuclear power station, but it has been 27 years since we last built one. We possess the best conditions in Europe for wind power, but new onshore wind farms are effectively banned in England and it can take 13 years to build a new offshore wind farm in Britain due to a malfunctioning planning system.

Let's be clear, making Britain energy secure and eliminating our exposure to international gas prices by 2030 will be a mammoth task.

We will need to more than triple the amount of energy generated from offshore wind, connect two new nuclear power stations to the grid, and build more grid infrastructure in the next seven years than was built in the last 32. It will mean accelerating the development of technologies such as hydrogen, batteries, and small modular reactors.

The challenge is massive – it will require genuine political will, major investments in new technologies, and innovation from industry – but so is the reward. Accelerating the shift to clean, domestic power by adopting the Powerbook's policies will mean:

1 INDEPENDENCE FROM GAS VOLATILITY:

Electricity bill exposure to international gas price shocks would fall twelvefold compared to the status quo. If international gas prices were to spike by 400% as they did in 2022, electricity bills would only rise by 20% not 235%.

2 NET IMPORTER TO NET EXPORTER:

The UK currently imports 20% of its electricity from overseas,¹ under the Powerbook's plan Britain would become a net exporter - selling £1.3bn of electricity to the rest of the world.

3 CHEAPER POWER FOR YOUR FAMILY:

Up to £120 per month off the average household electricity bill, compared to prices today.

¹ BEIS (2022), Energy Trends table 5.1, Energy Trends: UK electricity - GOV.UK (www.gov.uk)
NST Authority (2022), 'NSTA August 2022 oil and gas production projections and latest BEIS and CCC demand projection' North Sea Transition Authority (NSTA): Production and expenditure projections - Data downloads and publications - Data centre (nstaauthority.co.uk)



THE NEED FOR SPEED

In the past, the pace of change on the energy transition was determined by the availability of direct financial support, but this is no longer the case.

Over the past decade, renewables have witnessed dramatic cost declines. In fact, the price of solar, onshore wind, and offshore wind have fallen by 62%, 55%, and 75% respectively in under a decade.² The main obstacles to generating more energy from wind and solar now are a broken planning system and archaic regulation for grid connections.

For example, to win permission to build the Norfolk Boreas offshore wind farm, Swedish developer Vattenfall produced an environmental impact assessment 144 pages longer than the complete works of Tolstoy and Proust's seven volume *In Search of Lost Time* combined.³

Or look at Hornsea 3, when finished, it will be the largest single offshore wind farm in the world, generating enough electricity to power three million homes, while supporting 2,250 jobs in manufacturing on the site of Redcar's old steelworks. Yet, the planning decision for Hornsea 3 was delayed four times and spent two years sitting on the Secretary of State's desk.

In the case of onshore wind, just a single objection to a planning application can lead to a project being blocked altogether. While for nuclear, small modular reactors are effectively unable to proceed due to uncertainty over which sites they are allowed to use.

On top of unnecessary planning delays and blockages, new renewable energy and battery storage projects must wait more than a decade to obtain a connection to the grid. One developer, which builds battery storage projects, was quoted 2036 at the earliest for a grid connection – a 13 year delay.⁴

If Britain fails to act on energy security and is unable to dramatically shorten planning timelines for new energy infrastructure, then the outcome will be more than 70TWh of additional gas burnt – roughly the equivalent of leaving a 4-burner gas hob on for two million years.⁵ This is a problem not only because burning gas is expensive and generates carbon emissions, but also because higher demand means more revenue for aggressive, authoritarian governments such as Putin's Russia who benefit when fossil fuel prices are high.

Most pressing is the need for action on grid connections. At the moment, wind farms are paid to turn off because the grid is unable to transport the power from where it is generated to where most households are. Curtailment payments to wind farms reached £507m in 2021 and resulted in an extra two million tonnes of CO₂ being emitted. This is a growing problem as more renewables are added to the grid, but if grid investment timelines can be brought forward by three years then 7.4TWhs of curtailment can be prevented – enough to power every home in Wales almost twice over.

2 Fall in strike prices awarded in 2013 and 2022

Investing in renewable technologies – CfD contract terms and strike prices - GOV.UK (www.gov.uk)
Contracts for Difference (CfD) Allocation Round 4: results - GOV.UK (www.gov.uk)

3 13,275 pages. Source: Britain Remade analysis of Planning Inspectorate data.

4 Renewables groups sound alarm over UK grid connection delays. *The Financial Times*. January 2023.

5 Delayed action could see the UK generating 53 TWh electricity from gas in 2030 (FES Falling Short scenario). Our policies would reduce this to 13 TWh, a fall of 40 TWh of electricity. This would save 74 TWh of gas required to generate 40 TWh of electricity.



ENERGY SECURITY BY 2030

TECHNOLOGY	ACTION	OUTCOME
Offshore Wind	Reduce the time it takes to build a new offshore wind farm from 12 to 5.5 years.	At least 50GW of Offshore Wind Generation by 2030.
Onshore Wind	End the ban on onshore wind in England, reduce the time it takes to build a new onshore wind farm to four years, and create a new automatic right to repower.	At least 20GW of Onshore Wind Generation by 2030.
Solar	Reduce the time it takes to build a utility-scale solar farm to 15 months.	At least 40GW of Solar Generation by 2030.
Nuclear	Streamline the regulatory approval process and publish a clear siting strategy for SMRs.	At least two SMRs (1GW) connected to the grid with more under construction.
Transmission	Shorten the timeline for building new grid infrastructure and reform Ofgem regulation to accelerate grid connections.	Move the National Grid's timeline for transmission buildout forward by three years.
Long-duration energy storage	Set a 25GW target of long-duration energy storage to manage intermittency.	At least 10GW of long-duration energy storage constructed with a further 15GW under construction or permitted.



THE IMPACT OF ENERGY SECURITY

From 2020 to 2022, international gas prices surged by 400%.⁶ This led to a 235% rise in household electricity bills. In other words, every £1 rise in international gas prices led to a 59p rise in the electricity bills paid by British families.

The Powerbook provides a blueprint for how Britain can radically reduce its exposure to international gas prices by cutting the time it takes to build new clean energy infrastructure. Britain Remade believes it is not inevitable that it should take 12 years to build a new wind farm, four years to build a new solar farm, or eight years to build a new transmission line to take energy to where it is most needed. The Powerbook's 25 actions for energy security would streamline infrastructure planning and accelerate grid connections. This would cut timelines for deploying new solar, wind, and nuclear power stations dramatically. We estimate that the reforms would unlock 110GW of renewable generation, move grid buildout timelines forward by three years, and allow two Small Modular Reactors to be built by the end of the decade.

In this energy secure future, Britain's exposure to international gas prices would fall dramatically. In fact, gas would generate only 5% of electricity in the UK. If international gas prices were to spike by 400% again, electricity bills would only rise by 20% not 235%.⁷ Assuming that electricity bills fell to 2019 levels, this would mean another historic rise in gas prices would only lead to a £10 per month increase in electricity bills for the average household. In effect, a shift to clean energy would generate a £1,400 annual bill saving.⁸

Delivering on the policies within the Powerbook would mean that the UK was no longer reliant on imports for electricity. Currently, Britain imports 22% of its electricity.⁹ Under the Powerbook's plan, Britain would export 11% of its electricity. In short, Britain would go from being a net importer to being a net exporter.

Not only would the Powerbook's plan for energy security cut bills, boost exports, and reduce our exposure to international crises, it would also tackle climate change too. Fixing planning and speeding up grid connections for clean domestic power generation would cut emissions by 40 MtCO₂e.¹⁰ That's the equivalent of taking 30 million cars off the road.¹¹

6 Ofgem, Wholesale Market Indicators.

7 Gas bills would surge however, which highlights the need to still electrify home heating.

8 Electricity bills rose from approximately £640 to £2,140 (235%) between Winter 2021/22 and January 2023 following a 410% increase in gas wholesale prices: i.e. each 1% increase in gas prices led to an increase in electricity bills by 0.57%. By reducing gas' share of the generation mix, our policies aim to reduce this relationship to 0.05%, meaning a 410% increase in gas prices would lead to a 20% increase in electricity bills. Compared to pre-crisis levels, this would mean an electricity bill of £760: some £1,400 less than the January 2023 rate. <https://www.Ofgem.gov.uk/publications/Ofgem-announces-latest-quarterly-price-cap-update>

9 BEIS (2022), DUKES table 5.13 <https://www.gov.uk/government/statistics/electricity-chapter-5-digest-of-united-kingdom-energy-statistics-dukes>

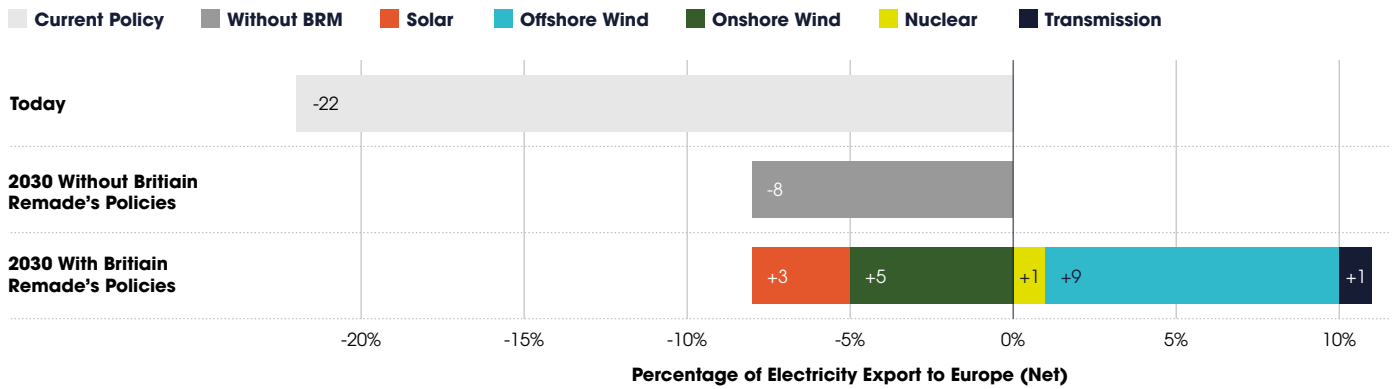
10 A fall from 50 MtCO₂e in 2020. <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2020>

11 The average petrol car emits 1.3 tCO₂e per year. Calculated from DfT (2022) Tables NTS0901, ENV0103 and A3.3.

<https://www.gov.uk/government/statistical-data-sets/nts09-vehicle-mileage-and-occupancy>

<https://www.gov.uk/government/statistical-data-sets/energy-and-environment-data-tables-env> <https://www.gov.uk/government/publications/tag-data-book>

The UK Can Be a Net Electricity Exporter



25 ACTIONS FOR ENERGY SECURITY

Update the 2008 Planning Act and fix the Development Consent Order process

1. Publish new National Policy Statements for Renewables, Nuclear, and Energy Networks as soon as possible to reduce planning delays and regulatory uncertainty.
2. Create a true one-stop shop for major energy infrastructure projects by amending the 2008 Planning Act so developers no longer have to seek consents from multiple agencies for environmental and other regulatory permits. This requirement should be replaced with a statutory duty for the relevant Secretary of State to have due regard to public comments from relevant agencies.
3. Create a Clean Energy Task Force to speed up the deployment of new energy projects modelled on the existing National Case Team in the Department for Transport which discharges 'requirements' (the equivalent of planning conditions) for road projects. This would ensure local planning authorities are not required to replicate functions carried out by central government.
4. Address staffing constraints at DESNZ, Natural England, and the Environment Agency that risk creating bottlenecks within the planning process.
5. Prevent delays at the decision stage by creating a statutory requirement on the Secretary of State to consider if additional questions to the developer are necessary two months into the three month decision timeframe.
6. The Secretary of State should be responsible for making a final decision on whether to accept projects for examination. The last three years has seen the same number of refusals and withdrawals at the first hurdle as in the first ten years of the NSIP regime - this must be reversed with political accountability.
7. Extend the planned reduction in statutory timescales from 18 months to 12 months for offshore wind projects to all clean energy projects including solar, nuclear next to existing nuclear sites, and transmission lines. Additionally, there should be a presumption in statutory guidance that the pre-examination process should be limited to a maximum of four months.
8. Automatically approve project amendments that have positive environmental impacts. Under the status quo, developers are forced to apply for additional planning permission to make changes with 'materially new or materially different environmental effects' even if the impact is positive.

Reform public consultation

9. Reduce the risk of judicial review for new energy infrastructure projects by amending statutory planning guidance to explicitly consider proportionality, the use of public funds and the impact of delay on critically needed infrastructure when determining whether a consultation is adequate. Guidance should also allow the 'examination' phase to be taken into account, as well as applying a 'presumptive' pre-examination so that deficiencies can be corrected in that period, rather than being rejected.
10. Legislate to create a 'Consultation Unit' which can legally certify that a project's consultation is adequate, which would radically reduce consultation-based legal challenges, and ensure developers are not incentivised to 'over-consult' when there are additional opportunities for interested parties at the examination stage.

Modernise environmental impact assessments

11. Invest in the creation of better environmental databanks, carry out preliminary environmental studies ahead of offshore lease auctions, and mandate that developers share the results of their environmental studies in full.
12. Create a new environmental mapping tool to identify areas most appropriate for new renewable projects (i.e. those with low environmental significance). Designate these areas as Clean Power Zones and adopt Spain's policy of eliminating the default requirement for environmental impact assessments for all onshore wind (75MW and under) and solar projects (150MWs and under) in these zones.
13. Streamline and enhance environmental protections by replacing Environmental Impact Assessments and Habitats Regulation Assessments with Environmental Outcome Reports and adopting a strategic approach to compensation modelled on the proposed Offshore Wind Environmental Improvement Package.
14. Create a standardised methodology for carbon assessments within National Policy Statements to provide certainty for infrastructure developers and prevent a common source of legal challenges.



Create new permitted development rights and allow onshore wind projects to go ahead

15. Create a new 'Right to Repower' in the National Planning Policy Framework granting automatic planning permission to all upgrades to existing renewable sites provided there's no significant additional visual impact.
16. Eliminate England's effective ban on new onshore wind developments by removing the requirement for unanimous consent and replacing it with a Community Safeguard, which allows projects to proceed unless a majority of local residents actively oppose it. New onshore wind developments should be enabled to offer local residents bill discounts.
17. Unlock a 'Rooftop Revolution' by creating a Permitted Development Right to install solar panels on all non-listed commercial rooftops outside of Areas of Outstanding Natural Beauty or Conservation Areas.

Rapidly publish a new siting strategy for nuclear energy

18. Set up Great British Nuclear (GBN) immediately in a limited form, in order to publish a new siting strategy for new nuclear projects. Delays to GBN due to wider questions around project financing should not be allowed to become a barrier to developers scoping out potential sites and engaging local communities.

Update National Policy Statements to make them suitable for SMRs

19. The National Policy Statement for Nuclear should make clear that SMR and AMRs would be acceptable on any existing nuclear site or site previously deemed suitable for nuclear. Additionally, the NPS should endorse that many disused coal power stations or industrial sites could be repurposed into SMRs and so should benefit from the same policy support.
20. The National Policy Statement for Nuclear should also emphasise the need for standardisation in SMR design to make sure current policy tests around alternatives and good design do not slow the rapid and programmatic build-out of fleets.

Accelerate grid build-out rates and speed up connections

21. The FSO should be granted the power to direct Ofgem to approve investment in improving transmission network capacity in line with its understanding of the future system. Texas' Competitive Renewable Energy Zones, where transmission investments are targeted at areas where regulatory constraints on renewable deployment are lowest, should be considered as a model.
22. Reform grid connections to limit delays by moving from the first-come first-served model to a more market-based system.

Set a target for 25GW of long-duration energy storage by 2035

23. Set an Energy Systems Operator backed target for 25GWs of long duration energy storage by 2035.
24. Publish a new National Policy Statement for non-battery long duration energy storage technologies to enable the delivery of the 2035 target. As a range of long duration energy storage technologies are subject to geographical constraints the National Policy Statement should designate a range of sites such as salt caverns as appropriate.
25. Reform the energy market for long duration energy storage technologies to de-risk investments in nascent technologies through longer balancing contracts, a level playing field with gas peakers, and contracts that reward the wider benefits of storage beyond spot prices such as meeting thermal constraints.



Building more wind and solar farms will be pivotal in reducing our exposure to commodity shocks and getting household bills down to manageable levels.

Britain's unique geography makes it one of the best places in the world to deploy wind turbines and there have been major successes in the past decade in offshore wind, in particular. In fact, only China has a larger installed capacity than Britain. With Hornsea 2 89km off the Yorkshire coast, Britain is home to the world's largest offshore wind farm. Britain also hosts the Offshore Renewable Energy Catapult in Blyth, a world-leading testing facility, and when construction is complete, Dogger Bank will take Hornsea 2's crown as the largest offshore wind farm in the world.

Yet, Britain should not be complacent. Not only will becoming energy secure require us to more than triple the amount of offshore wind capacity installed, it also means boosting our onshore wind output and more than tripling our solar output too. Put simply, the scale of change required is massive.

The good news is that renewables have seen and continue to see major cost declines. The key constraint on getting more renewables online is no longer financing, but delays to permitting, planning, and grid connections.

Onshore wind, the cheapest form of energy on many measures, is effectively banned in England. Under current rules, projects can only go ahead in England if they are on land identified as suitable for onshore wind and proceed with unanimous consent. In other words, a project can be blocked if just a single resident objects. At the same time, attempts to boost generation by upgrading and replacing technology at existing renewable sites are hamstrung by rules that require developers to re-apply for planning permission.

Solar deployment has also encountered substantial challenges due to the planning system. Many projects have faced intense opposition from local councillors and some politicians have advocated for an effective ban on solar on any farmland. Adding solar panels to industrial rooftops may enjoy strong public support but projects producing more than 1MW of power still require planning permission. On top of these issues, navigating the slow and bureaucratic planning process for major infrastructure projects is such a challenge that many solar developers are choosing to limit their projects to 49.9MW.¹²

¹² Sam Dumitriu. (2023). "How Spain eliminated environmental impact assessments for most renewable projects." *Notes on Growth*.



Offshore wind faces major planning barriers too, despite the UK's ambitious 50GW capacity by 2030 target. Almost half (40%) of all major infrastructure projects have been delayed at the planning stage since 2017. For instance, the Norfolk Vanguard offshore wind farm waited more than two years to receive approval from the Secretary of State, but then had its planning permission quashed because of a legal challenge from a local resident who had concerns about the visual impact of the scheme.¹³ It was finally re-approved last February – a 26 month delay.

The British Energy Security Strategy, published in the wake of Russia's invasion of Ukraine, set out plans to reduce the statutory timescale from 18 to 12 months and create a faster track for projects which meet quality standards.¹⁴ These are positive steps, but it is a mistake to excessively focus on what happens once a planning application has been lodged.

For example, in the case of Hornsea 3 developer Ørsted held multiple rounds of public consultation over a period two years before filing their application. Numerous infrastructure projects have faced legal challenges on the grounds of inadequate consultation.

There is also the cost of assembling the planning application in the first place. In order to win permission to build a new offshore wind farm, developers often submit over a thousand documents including a 10,000 plus page environmental impact assessment. The billable hours of lawyers and specialist planning consultants add up fast. But, even then there's no guarantee of approval. In fact, the Planning Inspectorate has recommended rejection for all major offshore wind projects in recent years.

As a result of these slow, bureaucratic, and uncertain planning processes, it can take up to 13 years to build an offshore wind farm and up to five years to build a large-scale solar farm. Almost all of that time is spent navigating the planning system and waiting for a grid connection. In fact, construction on offshore wind farms can be completed in two years and solar farms take around three to four months in many cases.¹⁵ **Without reform to the planning system, it will not be possible to add enough new solar and wind farms to make Britain's electricity supply secure by 2030.**

¹³ It should be noted the legal claimant who challenged the wind farm stresses he supports "renewable wind power electricity which is a wonderful progression for the people of the UK", he merely objected to the visual impact of the cables and substations needed to transmit wind power into people's homes.

¹⁴ <https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy#renewables>

¹⁵ Britain Remade analysis of Renewable Energy Planning Database

It must be stressed that this is a global problem. The Energy Transitions Committee estimates that the world is set to miss out on up to 3,500 TWh of clean electricity generation from wind and solar in 2030 due to key barriers to deployment – such as planning and permitting delays. Yet, the rest of the world is also taking action. In both the European Union and the US, proposals to dramatically speed up the planning process for clean energy infrastructure have been put forward. Some EU countries, such as Spain, have already passed emergency legislation to boost renewable deployment.

What needs to be done

To become energy secure by 2030, Britain will need to unlock 70GW of additional renewable generation in less than seven years. The time it takes to build a new offshore wind farm will need to be cut to five and a half years, to four years for onshore wind, and to just over one year for solar. This is possible, but it will require substantial reforms to the planning process.

Update the 2008 Planning Act and fix the Development Consent Order process

The immediate task is to repair the planning process for Nationally Significant Infrastructure Projects (NSIP) by publishing new National Policy Statements for renewable energy generation, electricity transmission networks, and nuclear power stations. One key driver in the rise of document counts, delays, and legal challenges over the past decade has been a failure to publish up-to-date National Policy Statements (NPS). These documents guide planning policy and communicate to developers what is and isn't allowed. However, new NPSs for energy have not been published since 2011. This lack of clarity has created confusion for developers and led to applicants gold-plating each submission. Dispute over what is and isn't national policy also opens the door to legal challenges and further delays. A draft updated National Policy Statement for renewable electricity generation already exists and has been consulted on. However, it is still yet to be fully published and won't be until June at the earliest according to DLUHC's recent NSIP Action Plan.

Publishing new National Policy Statements is an important first step, but will not be enough to cut planning timelines by what is necessary. For instance, delays at the decision stage are often caused by the Secretary of State asking additional questions to the developer. **Creating a statutory duty for the relevant Secretary of State to consider if additional questions are necessary two months into the three month decisions phase** would prevent unnecessary delays at the decision stage.

When the Planning Act 2008 was passed, the intention was to create a one-stop shop for nationally significant infrastructure projects.

But in practice, developers often have to seek consents from multiple environmental agencies. To create a real one-stop shop for major energy projects the government should **make regulations under section 150 of the 2008 Planning Act so developers no longer have to seek consents from multiple agencies for environmental permits and replace this requirement with a statutory duty for the relevant Secretary of State to have due regard to public comments from relevant agencies.**

Recent projects have also fallen at the first hurdle when making an application for a DCO. The number of projects which were refused or withdrawn at that stage between 2010 and 2020 was seven. In the last three years, there have been eight such projects. One project recently withdrawn, was re-submitted nine days later and then accepted. **Statutory guidance should be amended to include a 'presumption' of a pre-examination period which can be used to remedy deficiencies in applications without requiring them to re-submit delay, and add a further two month period.**¹⁶ To reverse the wider trend of rejections at the first stage with political accountability, **the Secretary of State should be responsible for making a final decision on whether to accept projects for examination.**

The National Case Team in the Department for Transport provides a model worth replicating. It discharges all requirements (the equivalent of planning conditions) for road projects and ensures local authorities do not have to replicate central government functions. **The Government should create a Clean Energy Taskforce modelled on the National Case Team.** Action should also be taken to **address staffing delays at key agencies such as Natural England, the Environment Agency, and the Department for Energy Security and Net Zero**, which can create bottlenecks.

Under the existing NSIP system, developers are forced to apply for additional planning permission to make changes with 'materially new or materially different environmental effects' even if the impact is positive. One straightforward way to streamline the NSIP process and eliminate pointless red tape would be to **automatically approve project amendments that have positive environmental impacts.**

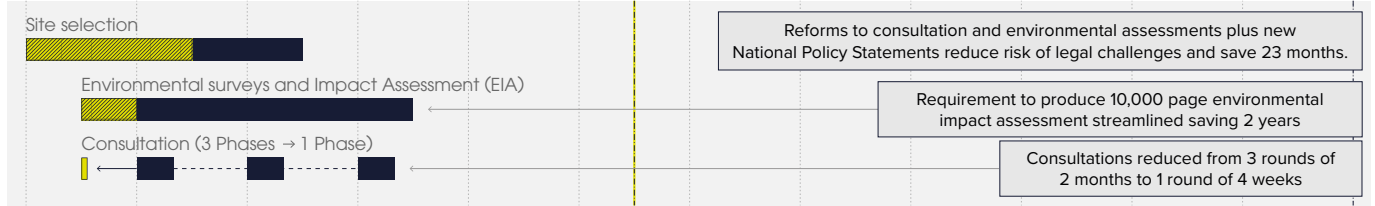
The British Energy Security Strategy proposed reducing the statutory timescale for offshore wind projects from 18 to 12 months. **This should be extended to all clean energy projects such as offshore wind, solar, and nuclear near existing sites.** Additionally, statutory guidance should be published making clear that **the pre-examination process should last no longer than four months unless exceptional circumstances apply.** The Government is consulting on 'quality standards' which will enable this, but it is important they do not simply take the two month reduction and add it onto the pre-application phase.

¹⁶ Mustafa Latif-Aramesh. (2022). 932: *What we really think of the Planning Act 2008 regime*. BDB Pitmans.

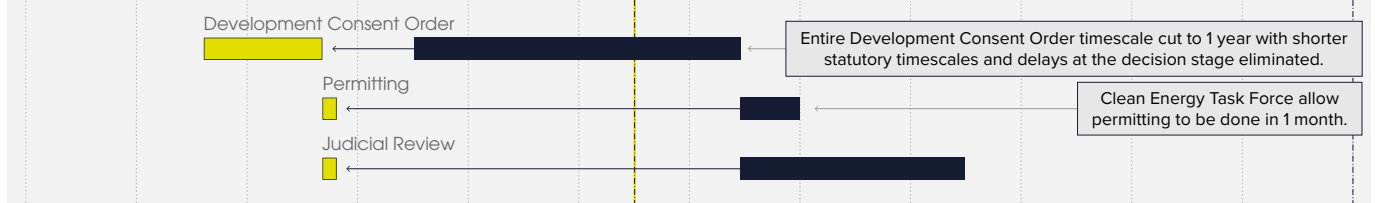
Timeline for Offshore Wind

■ Current Policy ■ Powerbook Policy
Hatching shows same timeframe

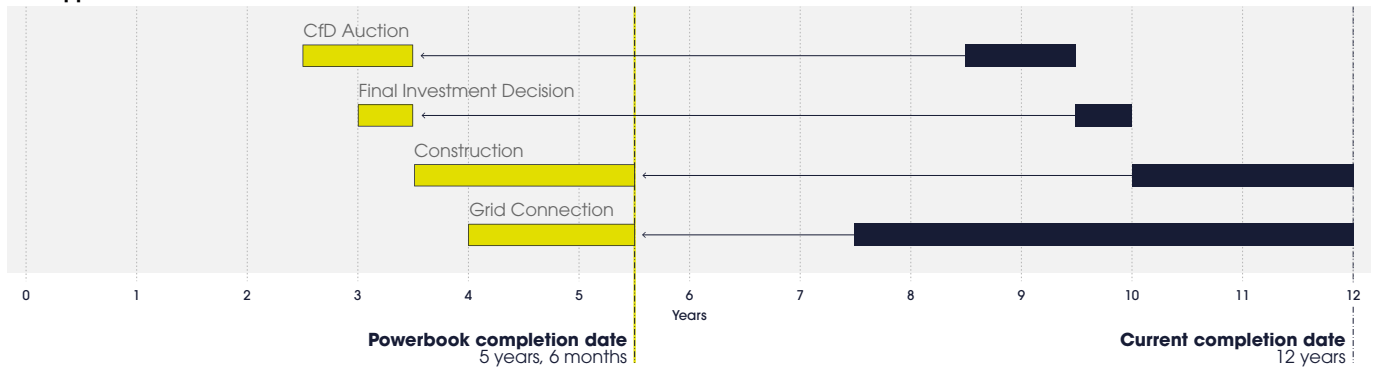
Pre-application



Application



Post-application



Reform public consultation

Before renewable energy developers can even apply for planning permission, they are required to consult the public for a minimum of 28 days. Inadequate consultation can be grounds to mount a legal challenge if permission is granted. As a result, major renewable energy projects such as Hornsea 3 have held as many as three separate consultations to avoid legal challenges.¹⁷ In an ideal world, every project would be consulted on extensively, however there is a trade-off between more consultation and faster delivery (and the lower bills for households that it would bring). To ensure the balance is right, **statutory planning guidance should be amended to explicitly consider proportionality, the use of public funds and the impact of delay on critically needed infrastructure when determining whether a consultation is adequate.** There should also be an acknowledgment that the examination process itself is a mechanism for obtaining feedback.

To prevent developers from engaging in ever more extensive consultations, the Government should **legislate to create a 'Consultation Unit' which can legally certify that a project's consultation is adequate, which would radically reduce consultation-based legal challenges.**

Implementing the above two measures would cut lead times for new renewable projects at the front-end by limiting the number, scale, and length of consultations and prevent delays at the back-end by reducing the risk of decisions being challenged in the courts.

Modernise environmental impact assessments

In order to obtain planning permission to build a new offshore wind or solar farm, developers must prepare an extensive environmental impact assessment and statement. This process can take around two years as developers carry out multiple wildlife surveys and environmental studies. Yet despite these documents often stretching to over 10,000 pages in length, the UK remains one of the most nature depleted countries in the world. Protections for nature are crucial, but delays to renewable projects can be counterproductive when climate change is a major driver of biodiversity loss.

Part of the problem is the requirement to carry out environmental assessments is the same for every site and every type of project.

¹⁷ The recently delayed Lower Thames Crossing has held five public consultations all more than 5 weeks long.

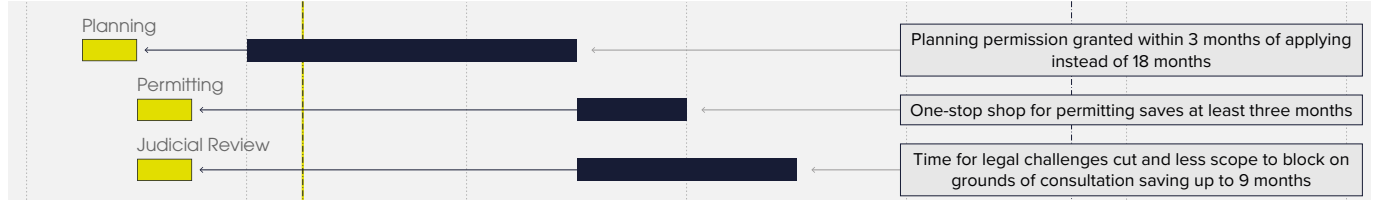
Timeline for Solar

■ **Current Policy** ■ **Powerbook Policy**
Hatching shows same timeframe

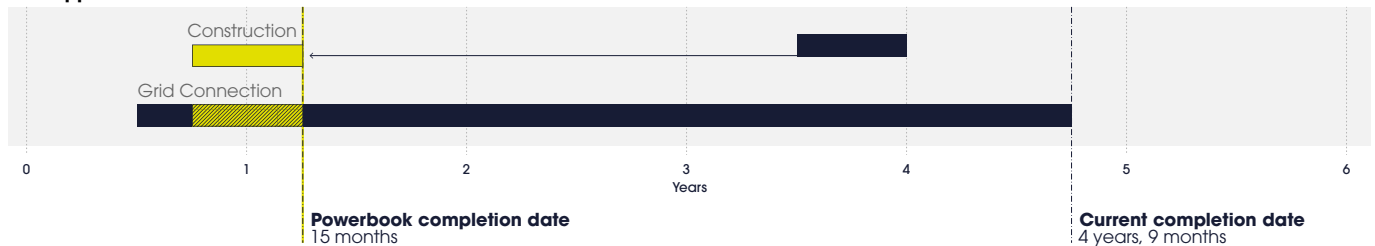
Pre-application



Application



Post-Application



Spain has recently adopted an alternative approach by using publicly available mapping data to identify land most appropriate for future renewable projects.¹⁸ In areas found to have low or moderate environmental significance, the default requirement to perform an environmental assessment is waived for all onshore wind projects (75MW and under) and Solar Projects (150MWs and under). In these zones, there's a rule of positive silence where environmental assessments are only undertaken if explicitly requested by a public body.

The UK should replicate this model by **creating a new environmental mapping tool to identify areas most appropriate for new renewable projects and designate those zones Clean Power Zones where environmental impact assessments are waived in all but exceptional cases for all onshore wind (75MW and under) and solar projects (150MWs and under).**

Clean Power Zones would cut up to two years from the planning process for many renewable projects, but for larger projects or those on more complex sites a deeper reform is needed. **Replacing EU-derived Environmental Impact Assessments with new Environmental Outcome Reports, assessed against ambitious environmental targets set by the Government would reduce bureaucracy significantly by resolving uncertainty and enabling a more strategic approach to compensation, while restoring nature at the same time.**

The existing focus on project-specific impacts has led to numerous delays to renewable projects, including the Hornsea 4 offshore wind farm.¹⁹ For instance, moving to the strategic approach to compensation and mitigation in the Offshore Wind Environmental Improvement Package (OWEIP) would allow developers to contribute to a wider Marine Recovery Fund across multiple projects, rather than designing their own solutions on a project-by-project basis.

To aid energy infrastructure planning and identify land for Clean Power Zones, the government should **invest in the creation of better environmental databanks, carry out preliminary environmental studies ahead of offshore lease auctions, and mandate that developers share the results of their environmental studies in full.**

Another source of uncertainty, which can generate additional paperwork burdens, is the lack of a standardised methodology for carbon assessments in National Policy Statements. This has led to multiple legal challenges to transport projects in particular, this in turn encourages developers to over-compensate and provide more information than necessary. **Creating a standardised methodology for carbon assessments within National Policy Statements would solve this problem.**²⁰

¹⁸ The European Commission has proposed a similarly extensive policy under the RePowerEU program.

¹⁹ Murray, J. (2023) Renewables industry slams delay to Hornsea 4 Offshore Wind Farm planning decision. Business Green.

²⁰ See point 5 for more information how the lack of a standardised methodology can create additional burdens for renewable or other low-carbon projects. <https://www.bdbpitmans.com/insights/how-can-planning-policy-help-with-the-delivery-of-small-modular-reactors/>

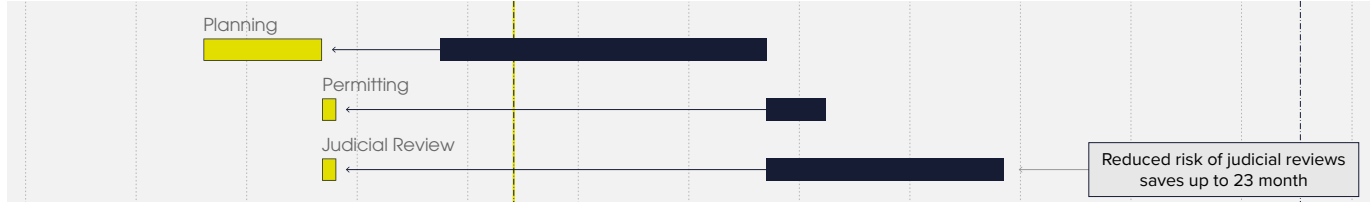
Timeline for Onshore Wind

■ Current Policy ■ Powerbook Policy
 Hatching shows same timeframe

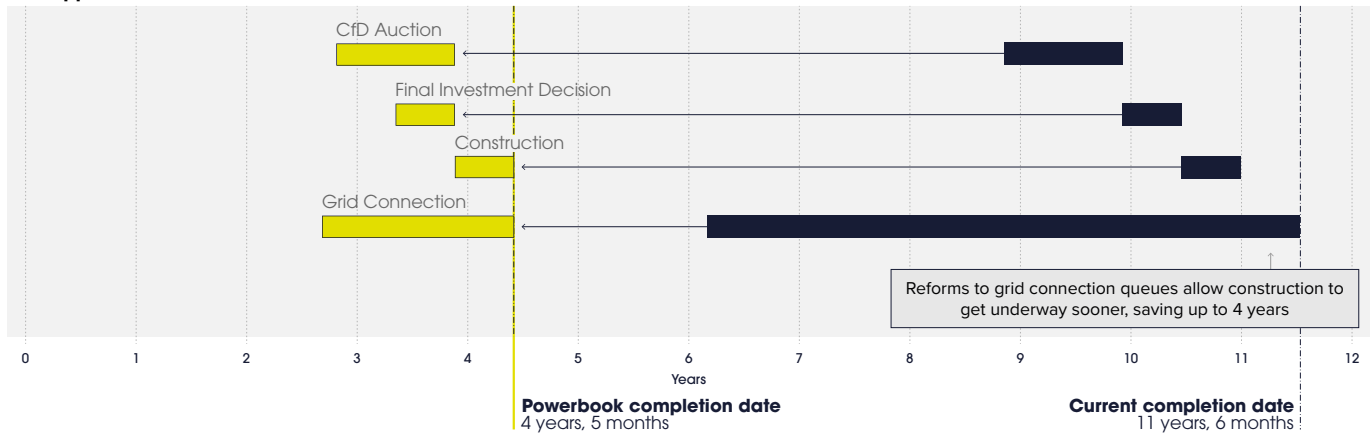
Pre-application



Application



Post-Application



Create new permitted development rights and allow onshore wind projects to go ahead

Repowering, the process of upgrading or extending the life of existing renewable infrastructure, will play an important role in making the UK energy secure. This process typically does not create additional new visual impacts, yet in many cases developers are required to re-apply for planning permission before projects can go ahead. To eliminate unnecessary planning delays, the Government should **create a new 'Right to Repower' in the National Planning Policy Framework granting automatic planning permission to all upgrades to existing renewable sites provided there's no significant additional visual impact.** It is important that in cases where there is a significant additional visual impact that any planning application is considered from the baseline of what exists on the site already.

There is widespread public support for installing solar panels on the rooftops of industrial buildings such as warehouses, however under the status quo projects with generating capacity of 1MW or more must apply for planning permission. While permission is typically granted, this can delay projects by months and add costs.

To avoid this issue, the Government should create a new Permitted Development Right to install solar panels (with no MW caps) on all non-listed commercial rooftops outside of Areas of Outstanding Natural Beauty or Conservation Areas. England's effective ban on onshore wind, a form of energy that is both cheaper than gas and can be deployed quickly, is a major barrier to making Britain energy secure. The revised footnote in the draft National Planning Policy Framework removes the requirement, but has been criticised by renewable developers for a lack of clarity. A better option would be to allow onshore wind developments to proceed in the same way as solar farms, but create a new Community Safeguard. This Community Safeguard would allow projects to go ahead unless 20% of affected residents (within 3km of the project) sign a petition opposing. In such cases, the project would be put to a local vote.²¹ Onshore wind developers should be free to offer local residents bill discounts.

21 Sam Dumitriu. (February 2023). How to end England's Onshore Wind Ban. *Notes on Growth*. This could be done through changes to the National Planning Policy Framework.



NUCLEAR

Unlocking 110GW of domestic renewable generation is necessary to make Britain energy secure by 2030, but it is not sufficient alone. Nuclear provides a reliable base-load of power that can underpin and complement a majority renewable grid. Yet, the UK is set to close five of its six existing nuclear power stations by 2030 and only one, Hinkley Point C, is currently under construction. The UK has not built a new nuclear power station in 27 years. In fact, the last nuclear power built in the UK, Sizewell B, was signed off when Margaret Thatcher was Prime Minister.

It was not always like this. In 1956, Queen Elizabeth II opened the world's first full-scale commercial nuclear power station in Cumbria. In the following decade, Britain built a further nine more. When Calder Hall was opened, Lord Privy Seal, Richard Butler, noted "It may be that after 1965 every new power station being built will be an atomic power station." As late as the 1990s, Britain generated a quarter of its electricity through nuclear power. Yet today, only 15% of Britain's electricity comes from nuclear power, though we import some more from France via interconnectors.

Concerns over safety in the wake of disasters such as the Windscale fire and Three Mile Island led to strict regulations such as ALARA, the rule that background radiation levels are made 'as low as reasonably achievable'.²² This has meant productivity gains that could have brought cost declines were instead reinvested into improved safety. While initial gains were undoubtedly welcome, further gains have only served to make the safest way to generate power even safer. As *Our World in Data* notes, "nuclear is one of the safest and cleanest energy sources – per unit of energy it results in hundreds of fewer deaths than coal, oil or gas, and is comparable to modern renewables such as solar

or wind."²³ In fact, by displacing fossil fuel production it is estimated nuclear power has prevented two million deaths due to air pollution worldwide between 1971 and 2009.²⁴

Another reason why the UK has failed to build enough power stations to still generate a quarter of its electricity from nuclear power is excessive bureaucracy within the planning system. Hinkley Point C, which will power up to six million homes with clean domestic power, was intended to be operational this year, but will not be completed until 2027, with construction starting six years after planning permission was first applied for. Yet Hinkley Point C had a comparatively easy ride through the planning system when compared to Sizewell C. For example, compare the page counts on each project's environmental impact assessment and statements. Sizewell C came in at 44,260 pages – that's almost 13,000 pages longer than Hinkley Point C. Or compare the number of written questions asked by the Planning Inspectorate. Hinkley Point C received 17, Sizewell C received a staggering 2,229. Sizewell C's total document count was more than four times as long as Hinkley C's.

²² For a summary of this issue, we recommend. Crawford, J. (2021). Why has nuclear power been a flop? *The Roots of Progress*.

²³ Ritchie, Rosado, and Roser. (2022). Nuclear Energy. *Our World In Data*.

²⁴ van der Merwe, A. (2019). Nuclear energy saves lives. *Nature*, 570(7759), 36-37.



The nation that has seen the greatest success in reducing nuclear construction costs is South Korea, but they've adopted a different approach to the UK.²⁵ Instead of approving one project at a time, they have taken a fleet approach where they approve multiple projects at once to be built one after another. The UK would struggle to adopt this approach under existing planning rules. Sizewell C used a similar reactor design to Hinkley C, but faced a significantly larger planning burden.

Small Modular Reactors (SMRs) are a new form of nuclear power station that can be constructed off-site, then shipped and assembled. As their name suggests, they are typically less powerful than traditional nuclear power stations, and capable of producing around 300MW of electricity. As they can be built off-site and on a production line, there is the potential for the cost reductions due to economies of scale and learning-by-doing that we have seen for renewables. SMR technology is still new, but multiple reactors are now under construction or are planned to be deployed by the end of the decade. For example, NuScale has agreements to build two 60MW reactors in Idaho and 'is ready to move forward' in the UK.²⁶ GE also has an agreement to deploy a Hitachi SMR by 2028 in Canada.²⁷ Last Energy, which produces a 20MW micro-SMR suitable for heavy energy users, such as chemical plants and data centres, already has a project order book in the UK. These projects are underpinned by customers committing in advance to long-term power purchase agreements, which remove the need for ongoing government subsidies.²⁸ Rolls-Royce SMR received £210m of UK Government grant for development and was the first technology to enter the UK's regulatory process more than a year ago. It has prioritised four sites – two in Wales, one in Cumbria and one in Gloucestershire - for its first phase of deployment.

Yet many of the economies of scale will be lost if SMRs are required to navigate the same planning process as full-scale nuclear power stations. In fact, this issue will favour larger projects as the fixed cost of planning delays will be a smaller share of cost-per-MW for full-scale projects. Leading planning lawyers have questioned whether a full five person examining panel and six month examination period is equally necessary for full-scale nuclear power stations and SMRs that are on average 1/16th of their size and assembled off-site.²⁹

What needs to be done

Rapidly publish a new siting strategy for nuclear energy

There is a pressing need to **publish an updated National Policy Statement for nuclear energy**. While the existing National Policy Statement identifies a number of sites that would be appropriate for hosting nuclear power stations deployed before 2025, the problem is no new nuclear power station proposal will be able to have completed a Development Consent Order by 2025. As a result, no new nuclear power station can advance through the planning process until an updated National Policy Statement, which designates sites as appropriate, is published. The proposed creation of Great British Nuclear is a positive show of commitment to future nuclear development. However, debates over the organisation's role in funding projects are holding up its creation. This is an issue as Great British Nuclear is unable to identify sites as appropriate for nuclear development, until this is resolved.

25 Lovering, J. R., Yip, A., & Nordhaus, T. (2016). Historical construction costs of global nuclear power reactors. *Energy policy*, 91, 371-382.

26 SMR Tech Ready to Move Forward in the UK. *New Civil Engineer*.

27 GE Hitachi Nuclear Energy Selected by Ontario Power Generation as Technology Partner for Darlington New Nuclear Project. *GE Press Office*.

28 Mustoe, H. (2023, March 20). US firm agrees to sell 24 mini nuclear reactors to UK customers. *The Telegraph*.

29 Mustafa Latif-Aramesh. (2022). 940: Proposals for a nuclear modular DCO, and Defra consultation on nature recovery. *BDB Pitmans*.

Potential Nuclear Sites

- Designated for Nuclear
- Nuclear Power Plant
- ⊙ Nuclear Power Plant (Decommissioned)
- ▲ Coal Power Plant
- △ Coal Power Plant (Decommissioned)



We propose **setting up Great British Nuclear (GBN) immediately in a limited form, in order to publish a new siting strategy for new nuclear projects.** This would allow nuclear companies to begin the process of scoping out sites and engaging communities.

Update National Policy Statements to make them suitable for SMRs

National Policy Statements should not impose a one-size fits all approach to new nuclear development and instead recognise that SMRs require a bespoke approach compared to full-scale nuclear projects. As SMRs are a small fraction of the size of a full-scale nuclear plant, they can potentially be sited at a wider range of locations. To create greater options for SMRs, **the NPS for Nuclear should make clear that SMR and AMRs would be acceptable on any existing nuclear site or site previously deemed suitable for nuclear.**

It should also endorse that many former coal or industrial sites (such as Teesside Freeport) could be repurposed into SMRs and those sites should benefit from the same policy support. For instance, research from the US Department of Energy identified 80% of existing or retired coal-fired power sites as suitable for repurposing as SMRs.³⁰

The National Policy Statement should **explicitly note the need for standardisation in design and delivery for SMRs to prevent current policy tests around alternatives and good design from applying.** There is also a case for limiting the extent of consultation for SMRs. For instance, the subject of safety is addressed under existing nuclear safety licensing. Many projects have high levels of community support with a number of MPs campaigning for an SMR in their area. For such projects, the planning system should take an enabling approach.

30 DOE Report Finds Hundreds of Retiring Coal Plant Sites Could Convert to Nuclear. (2022). U.S. Department of Energy.



TRANSMISSION AND STORAGE

To become energy secure, end our power system's exposure to international gas prices, and meet rising electricity demand from heat pumps and EVs, Britain will need to add an additional 70GW of renewable capacity. This is achievable, provided ministers are willing to tackle the planning issues slowing build out rates, but it will be insufficient if we fail to build the infrastructure necessary to transmit that power into people's homes.

In the next seven years, the National Grid will need to build five times as much infrastructure as it did in the last 30. When grid infrastructure is unable to transmit energy from where it is generated to where it is needed wind farms are paid to stop generating. In 2021, these curtailment payments hit £501m. This figure will only rise so long as build rates for renewables outpace build rates for grid infrastructure. Assuming 70GW of new renewable generation is added by 2030, it will mean that at the National Grid's projected build-out rates more than 64TWh will be curtailed – costing £60m per month.³¹

Existing planning timelines and grid regulations make it difficult to build enough transmission infrastructure in time. The Climate Change Committee estimates all electricity network boundaries would need high levels of reinforcement, on average doubling their capabilities.³² However, it took almost twice as long to build a single transmission line from Beaulieu to Denny as it did to build the grid in the first place. The Scottish transmission line faced strong local opposition with more than 17,000 people lodging objections to the line.³³ Under the Powerbook's plan to shorten planning timelines and allow National Grid to make more anticipatory investments, National Grid's timeline for transmission could be brought forward by three years. This would prevent 27TWh of energy from being curtailed.

Long waits to obtain grid connections are one consequence of a planning and regulatory system not set up to deliver a decarbonised grid. For example, battery storage projects and renewable developers have been quoted ten year plus waits. The problem stretches beyond renewables too. The Greater London Authority recently wrote to three West London boroughs warning that they face an effective ban on new house building until 2035 due to long waits for grid connections. The grid connection issue is relatively new: as late as 2016 grid connections average wait-times were just ten months.³⁴ Part of the issue is regulators seeking to reduce costs for consumers have prevented the buildout of grids beyond current need, however this over-cautious approach has been misguided and the costs of grid constraints outweigh any savings.

Unlocking 110GW of renewable generation poses challenges beyond the need to reinforce the grid. Flexible forms of generation are necessary to keep the lights on when intermittent renewables are not producing energy. For instance, National Grid recently turned on emergency coal plants (previously due to close last year) during the recent cold snap to avoid blackouts after multiple days with little to no wind. While some additional flexibility is likely to be gained from EVs feeding back into the grid when demand is high and charging when demand is low, there will be a need to build additional low-carbon flexible generation.

31 Curtailment from NG ESO's FES 2022. 64TWh requires 120 TWh of gas given a CCGT efficiency of 53%. Assuming a gas price of 135p/therm, 120TWh of gas would cost £5.6bn. This equates to £700m per year, or £60m per month, to 2030.

National Grid ESO (2022), FES 2022 Data workbook, table FL.21, Future Energy Scenarios 2022 | National Grid ESO
Gas prices: UK NBP Natural Gas Futures | ICE (theice.com), accessed 13th March 2023

32 Bellamy, O., Hay, R., Herring, R., Isard, A., Labuschagne, C., Joffe, D., ... & Stark, C. (2023). Delivering a reliable decarbonised power system. Climate Change Committee.

33 John Vidal. (Oct 2008). Where the winds blow. The Guardian.

34 Conor Mcglone. (2023). How grid connection delays are threatening net-zero goals. Engineering and Technology.

This issue was highlighted in a recent Climate Change Committee report, which forecast that by 2035 on a mostly renewable grid there will be excess supply for over half of the year and excess demand for the other half. A range of energy storage technologies will play an important role in solving this issue.

Predictable short-term fluctuations in demand can be managed using lithium-ion batteries, a proven technology in widespread use. But harder to forecast problems such as wind droughts and interconnector failures alongside seasonal variability create a need for longer-duration storage technologies. On this front, there are a range of options including hydrogen (which can be produced via electrolysis), compressed-air storage (where air is compressed, stored underground and then released through a turbine to generate electricity), and liquid-air storage (where air is compressed and cooled to liquid form, before being evaporated through a turbine to create power). Each technology is at different stages of development, for instance, liquid-air storage is currently being developed in a world-first commercial stage facility in Carrington, near Manchester.

To become energy secure and accommodate 110GW of renewable generation, Britain will need to deploy long-duration energy storage technology at scale. However, projects do not yet have a clear route to market due to arrangements that fail to reward sufficiently long-duration storage.

What needs to be done

Accelerate grid build-out rates and speed up connections

We need to deliver transmission infrastructure faster, and ahead of need. Ofgem's price control process has proven too slow to deliver this, and even its recent Accelerating Onshore Electricity Transmission project only happened after the need for new capacity became overwhelming.

We need a different balance of risk on transmission investments, and it should be led by the strategic needs of the system as identified by the forthcoming Future System Operator (FSO). **The FSO should be granted the power to direct Ofgem to approve investment in improving transmission network capacity in line with its understanding of the future system.**

To ensure the right investments are made Ofgem should adopt a model based on Texas' Competitive Renewable Energy Zones. Under this system, transmission investments are targeted at areas where regulatory constraints on renewable development are lowest. If the Government creates new Clean Energy Zones as recommended above then it would be simple to prioritise grid investments in those areas.

The scale of investment that is needed to upgrade the grid will not be deliverable under existing planning timeframes.

As soon as possible, **the Government should publish a new National Policy Statement for Energy Networks that states there is a clear overarching need to reinforce the grid.**

Shortening the timelines for new renewable projects by more than half will only be possible if grid connections can be obtained swiftly. Existing rules require transmission networks to grant a place in the queue to projects on a first-come, first-serve basis regardless of the likelihood of a project progressing. As a result, many speculative submissions, that are unlikely to ever progress, hold up the queue. Proposals to ensure that staying at the front of the queue should be conditional on achieving certain milestones, such as applying for planning permission. This would be an improvement, but **the Government should go further to limit delays, by moving from the first-come first-served model to a more market-based system where higher-value projects can bid to move to the front of the queue.**

Set a target for 25GW of long-duration energy storage by 2035

Energy market arrangements and planning policy are currently not set up to deliver sufficient levels of energy storage for a majority renewables grid. To unlock necessary reforms and provide investors with certainty, **the Department for Energy Security and Net Zero (DESNZ) should set an Energy Systems Operator-backed target for 25GWs of long-duration energy storage by 2035.**

To meet the target, **DESNZ should publish a new National Policy Statement for long-duration energy storage technologies.** Due to the fact that many long-duration energy storage technologies such as hydrogen can be geographically constrained, it is important that the NPS designate a range of specific sites, such as salt caverns, as appropriate.

Responding to the need to balance electricity supply with demand is often a large part of the business case for storage assets. Yet most balancing contracts in the market do not last longer than 12 months, discouraging investment in these novel technologies, given the need to recover invested capital over many years. As a result, under current energy market arrangements, many of the wider benefits of longer-term storage are not reflected in market prices. The Government should investigate a Cap-and-Floor model and longer balancing contracts **to reform the energy market for long duration energy storage technologies to de-risk investments in nascent technologies through longer balancing contracts, a level playing field with gas peakers, and contracts that reward the wider benefits of storage beyond spot prices such as meeting thermal constraints.**

TIME FOR ACTION

The rest of the world is moving and Britain is at risk of getting left behind. Since Russia's illegal and unprovoked invasion of Ukraine, governments across the world have taken action. The United States passed the Inflation Reduction Act unleashing almost \$150bn worth of investment in low carbon energy generation and storage, while China added 84GWs of solar power last year alone. To put that into context, the UK's combined electricity production capacity from all sources is 75GW. Europe is acting too by setting ambitious renewable targets and proposing a plan to exempt most renewable projects from environmental impact assessments as part of its RePowerEU programme.

BRITAIN HAS A SIMPLE CHOICE.

Do nothing and accept another decade of economic stagnation, or get building *fast*. Britain Remade's Powerbook sets out 25 practical actions to get more renewables, more nuclear power stations, and more grid infrastructure built faster. Importantly, many of the actions in the Powerbook do not require new legislation to be put before parliament or additional public spending.

THE OPPORTUNITY IS MASSIVE.

If Britain takes the action necessary to become energy secure, not only will we bring down household bills and carbon emissions, but we will also unlock thousands of new skilled jobs throughout the clean energy supply chain.

From eliminating the nonsensical ban on onshore wind farms in England and enabling a rooftop solar revolution to eliminating unnecessary planning delays and fixing archaic grid regulations, the Powerbook shows a practical path to an energy secure Britain. A Britain where families no longer have to pay over the odds to keep the lights on.

