



October 2022

Net Zero Review: Call for Evidence

Preface

The Secretary of State for Business Energy and Industrial Strategy has commissioned an independent review of the government's approach to delivering its net zero target. The review is considering how to maximise economic growth and investment, and support UK energy security and affordability for consumers. One of the overarching questions posed in the Call for Evidence¹ is:

“Where and in what areas of policy focus could net zero be achieved in a more economically efficient manner?”

It is on the answer to this question which we will focus in this submission.

Energy Efficiency

The International Energy Agency (IEA) “...consider[s] energy efficiency to be the ‘first fuel’ as it still represents the cleanest and, in most cases, the cheapest way to meet our energy needs.”²

The Climate Change Committee (CCC) and the National Infrastructure Commission (NIC) say: “The Government lacks credible long-lasting policies to improve energy efficiency in UK buildings.”³ At least 15 million homes require some form of energy efficiency improvement, and the public sector estate faces extraordinary bills this winter. NHS England alone could see gas and electricity bills rise from £600m in 2021 to over £2bn in 2022.

But it is not just the recipient of energy efficiency funding who would save money – the public purse would save too. Since energy prices are being frozen at £2,500 for the average home, by the use of Government subsidy. analysis from the Energy and Climate Intelligence Unit (ECIU) shows that investment in home insulation could be cost neutral for the Treasury by the end of the current Parliamentary term.⁴

Renewables

The CCC and NIC also say renewables are the cheapest form of electricity generation and that onshore wind and solar have the potential to be deployed fastest. Renewables are now nine times cheaper than the current high electricity prices set by gas generation. High prices

mean renewable generators with contracts for difference are saving £23 per year for a dual-fuel customer under the latest price cap announcement.

Wind farm projects expected to come onstream by 2025 will deliver power at just under £40/MWh⁵ Onshore and offshore wind and solar power can all command similar prices today.⁶ In contrast EDF Energy has agreed a deal for Hinkley Point C at a 'strike price' of £92.50/MWh at 2012 prices for 35 years. Because this is index linked, the price has now increased to around £106/MWh and will be higher still when it starts generating around 2027.

The Government's Energy Security Strategy⁷ set a target of 24GW of new nuclear capacity by 2050 representing 25% of the UK's electricity demand. Electricity consumers will be expected to contribute towards the cost of building these reactors through the imposition of a nuclear levy raised against customers' energy bills under the RAB (Regulated Asset Base) finance model. BEIS estimates that Sizewell C will add around £1 per month to consumers' bills.⁸ Other experts estimate that the figure could be as high as £2.12 per month.⁹

The nuclear industry argues that we need to pay these higher prices for nuclear power because it's the only low carbon generation technology that can supply 'reliable baseload power' on a large scale. Former Energy Minister Greg Hands, for instance, asked: "*What do you do for your energy baseload when the wind isn't blowing and the sun isn't shining?*"¹⁰

Underlying this argument are three key assumptions. First, that baseload power is actually a good and necessary thing when, in fact, it means we have too much power when we don't want it, and not enough when we do. What we really need is flexible power (and flexible demand too) so that supply and demand can be matched instant by instant.¹¹ Payments to energy firms to switch off wind farms when the electricity is not needed over the last five years has reached £1bn and predictions put the cost over the next year at £500m.¹² What's needed are more ways to make use of this power, not more inflexible generation which will make the problem worse.

The second assumption is that nuclear power is a reliable baseload supplier. In fact, it's no such thing. All nuclear power stations are subject to tripping out for safety reasons or technical faults. That means that a 3.2GW nuclear power station has to be matched by 3.2GW of expensive 'spinning reserve' that can be called in at a moment's notice. For instance, in France more than half of EDF's nuclear reactors have been shut down for corrosion problems, maintenance and technical issues in recent months, just when the reactors were needed most to counter gas supply problems caused by Russia's invasion of Ukraine.¹³

The third is that the only way to supply baseload power is from baseload power stations, such as nuclear, coal and gas, designed to run flat-out all the time whether their power is actually needed or not. That's wrong too.¹⁴

There is a growing international consensus that 100% renewables is a feasible option worldwide at low cost.¹⁵ One study from Stamford University outlines how 145 countries could meet 100% of their business-as-usual energy needs with wind, water, solar and energy storage.¹⁶

Switching from fossil fuels to renewables could save the world as much as £10.2tn by 2050, according to an Oxford University study. The research also suggests nuclear power will play a diminishing role in the future global energy mix due to the rising costs of building reactors.

*“The costs of nuclear have consistently increased over the last five decades, making it highly unlikely to be cost competitive with plunging renewable and storage costs.”*¹⁷

While it is true that keeping a system with variable sources stable is more complex, a range of strategies can be employed that are often ignored or underutilized. What the UK needs to do in order to capitalise on the ever-decreasing cost of renewables, is to accelerate the delivery of technologies such as battery storage, pumped hydroelectric plants, and electrolyzers to produce clean-burning hydrogen, demand response, smart grids, vehicle-to-grid technology, optimizing the interaction between electricity, heat, transport, and industry and so on. Using all these strategies effectively to mitigate variability is where much of the cutting-edge development of 100% RE scenarios is taking place.¹⁸

Conclusion

Energy Efficiency and Renewables are the most economically efficient way of achieving net zero in the UK energy system. Nuclear power is too slow and expensive. Now that 100% renewable energy scenarios are seen as perfectly feasible, nuclear power baseload is no longer required and would, in fact, be economically inefficient.

¹ BEIS 29th Sept 2022 <https://www.gov.uk/government/consultations/review-of-net-zero-call-for-evidence/net-zero-review-call-for-evidence>

² IEA Press Release 17th November 2021 <https://www.iea.org/news/global-energy-efficiency-progress-is-recovering-but-not-quickly-enough-to-meet-international-climate-goals>

³ Climate Change Committee 6th September 2022 <https://www.theccc.org.uk/publication/ccc-and-nic-write-to-prime-minister-rt-hon-elizabeth-truss-mp/>

⁴ ECIU 8th Sept 2022 <https://eciu.net/media/press-releases/2022/treasury-could-break-even-on-insulating-millions-of-homes-before-next-election>

⁵ Engineering & Technology 9th Aug 2022 <https://eandt.theiet.org/content/articles/2022/08/the-long-and-winding-road-to-energy-net-zero-2050>

⁶ Guardian 24th May 2022 <https://www.theguardian.com/environment/2022/may/24/limits-on-renewables-will-keep-uk-energy-bills-higher-this-winter>

⁷ British Energy Security Strategy, BEIS, 7th April 2022 <https://www.gov.uk/government/publications/british-energy-security-strategy>

⁸ Guardian 3rd July 2022 <https://www.theguardian.com/business/2022/jul/03/poor-households-face-having-to-help-foot-bill-for-building-sizewell-c>

⁹ Guardian 22nd May 2022 <https://www.theguardian.com/environment/2022/may/22/sizewell-c-may-cost-double-government-estimates-and-take-five-years-longer-to-build>

¹⁰ Telegraph 21st March 2022 <https://www.telegraph.co.uk/news/2022/03/21/snp-must-rethink-nuclear-energy-policy-invasion-ukraine-says/>

¹¹ How nuclear power is switching off windfarms in Scotland – The truth about wind power compensation payments, 100% Renewable UK, 8th June 2020 <https://100percentrenewableuk.org/how-nuclear-power-undermines-renewable-energy-the-truth-about-wind-power-compensation-payments>

¹² Express 2nd Oct 2022 <https://www.scottishdailyexpress.co.uk/news/politics/wind-farm-switch-offs-cost-28135301>

¹³ CNBC 5th Oct 2022 <https://www.cnbc.com/2022/10/05/frances-nuclear-heavy-energy-strategy-faces-big-problems-this-winter.html>

¹⁴ Renew Economy 18th March 2016 <https://reneweconomy.com.au/dispelling-the-nuclear-baseload-myth-nothing-renewables-cant-do-better-94486/>

¹⁵ Breyer, C. et al On the History and Future of 100% Renewable Energy Systems Research, IEEE Access 10th June 2022. <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9837910>

¹⁶ PV Magazine 8th Aug 2022 <https://www.pv-magazine.com/2022/08/08/study-finds-100-renewables-would-pay-off-within-six-years/>

¹⁷ Independent 14th Sept 2022 <https://www.independent.co.uk/climate-change/news/energy-economy-carbon-renewables-cost-b2166361.html>

¹⁸ Times 7th May 2022 <https://www.thetimes.co.uk/article/wind-and-solar-boom-will-bring-energy-surplus-zplgq39rn>