

# NFLA Policy Briefing No.212



Date: 11<sup>th</sup> February 2021

**Subject: An assessment of the UK Energy White Paper and other UK Government policies to develop low carbon energy solutions through a mix of new nuclear, renewables and carbon capture and storage**

## i. Overview of report

After much delay, in late November and into December 2020 the UK Government published a number of key documents relating to its future energy policy. This included the Prime Minister's 'Ten Point Plan for a Green Industrial Revolution', a UK Energy White Paper, a National Infrastructure Strategy which noted significant energy projects, and a response to comments on its consultation about using a 'Revenue Asset Base' financing model for supporting the development of new nuclear reactors. The NFLA Steering Committee Policy Advisor Pete Roche and the independent consultant Dr Ian Fairlie have developed a useful summary of these energy policies. The report was first published on the website <https://no2nuclearpower.org.uk> and is kindly reproduced as a NFLA Policy Briefing for its member authorities.

## 1. The UK Energy White Paper -

The UK Government published its long-awaited Energy White Paper on 14th December. (1) After a string of earlier announcements including Boris Johnson's Ten Point Plan, (2) the National Infrastructure Strategy report (3) plus the Government's announcement of a new greenhouse gas target for 2030, there were relatively few surprises. The technical details are presented below, but first some overall conclusions.

Overall, this White Paper is unsatisfactory as it seems to be all things to all people. It appears to aim to please as many sectors as possible so as not to attract disapproval. Of course, in the real world, difficult choices have to be made - but the White Paper seeks to avoid this duty. Some parts of the White Paper are blithe statements devoid of any connection with reality, e.g. the notion that the market is desperate to invest in nuclear developments when nothing could be further from the truth. Other parts of it are quite thoughtful however and will require further study, e.g. the comments on a 'Green Industrial Revolution'.

## 2. Nuclear Power

The accompanying response to the Regulated Asset Base consultation is a disrespectful slap in the face to those who oppose nuclear power "in principle". It seems to say if you are principled in your comments, then the Government will not listen to them. This is a nauseating state of affairs.

In addition, one could easily reply but what about the many respondents who opposed nuclear developments on the grounds of its exorbitant costs? Of market rejection? Or safety? Or health grounds? Or lack of sustainability? Or nuclear proliferation?

Hovering over the White Paper are a whole series of qualifications of 'ifs and buts', especially on nuclear developments which could mean that nothing actually will transpire on the nuclear front. For groups like the NFLA, this would be a good outcome.

**THE LOCAL GOVERNMENT VOICE ON NUCLEAR ISSUES:  
COUNCILS WORKING FOR A SAFE, PEACEFUL & RENEWABLE FUTURE**

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C/o Nuclear Policy, Level 3, Town Hall Extension, Library Walk, Manchester, M60 3NY  
Tel: 0161 234 3244 E-Mail: [s.morris4@manchester.gov.uk](mailto:s.morris4@manchester.gov.uk) Website: <http://www.nuclearpolicy.info>

Also hovering over the whole White Paper is a distinct air of unreality. Its ambitious proposals are not summed in monetary terms. What does HM Treasury think of these commitments of many hundreds of millions of pounds, at a time when it has to fund over £400 billion in Covid-19 related payments, plus the ensuing economic recession, plus the fallout from Brexit?

The White Paper in many ways seems like an unfinished work in progress, as many future reports are promised including the following:

- With Ofgem, the Government will publish a new Smart Systems Plan in spring 2021;
- The Government will publish an Industrial Decarbonisation Strategy in spring 2021;
- The Government will publish a dedicated Hydrogen Strategy in early 2021;
- The Government is consulting on phasing out coal in electricity generation a year early;
- The Government will further clarify measures to transform energy, and support a green recovery;
- A transport decarbonisation plan will be published in the spring of 2021;
- The Government will publish a dedicated Heat and Buildings Strategy in early 2021;
- The Government will complete a review of the existing energy National Policy Statements (NPS), with the aim of designating an updated NPS by the end of 2021;
- The Government will call for evidence on affordability and fairness before April 2021.

In other words, the White Paper is perhaps best seen as a loose framework of thoughts, some good and some bad, with most of the real choices and details to be left for yet-to-be published supporting documents.

### 3. The Details

#### (a) The Revenue Asset Base model or RAB

The Government's response to the Consultation on the Regulated Asset Base (RAB) method for funding new nuclear reactors was published alongside the White Paper. (4) This concludes that the RAB model has the potential to reduce the cost of raising private finance for new nuclear projects, thereby reducing consumer bills, while still preserving incentives for the private sector to complete nuclear projects to time and budget. Unfortunately, no justifications are provided for these optimistic statements, given that major investors are busy withdrawing from nuclear rather than seeking to enter them.

*"The government will aim to bring at least one large-scale nuclear project to a Final Investment Decision (FID) by the end of this parliament, subject to clear value for money for both consumers and taxpayers and all relevant approvals." Following the consultation, Government will continue to explore a range of financing options with developers, including RAB. As noted in the consultation, raising the capital required for a new nuclear project is likely to be challenging given the significant investment commitment needed for a new nuclear project developer to reach a FID.*

*Alongside considering the RAB model we will also continue to consider the potential role of government finance during construction.*

*Any evidence submitted by people and organisations thought to be opposed to new reactors was rather disrespectfully dismissed: "with broad agreement from industry and those members of the public who were not in-principle opposed to nuclear to our proposals, we believe that a RAB in line with the high-level design principles set out in the consultation remains a credible basis for financing large-scale nuclear projects."*

The Government's Consultation Document on RAB didn't give enough detail to provide a proper critique because the Government wanted to reveal details only to potential investors: *"Some respondents stated that in order to provide more granular feedback the Government should provide more details on the specific design of the RAB model. However, the stated purpose of the consultation was to seek views on the high-level design principles of a RAB model. We consider that the level of information provided was appropriate for this stage of the process. Further details will be developed in discussion with developers of specific projects."*

In other words, those seeking more information, including those opposed to RAB, are given short shrift.

## **(b) Possible Nuclear Plans**

The Energy White Paper reiterates the plan to bring at least one further largescale nuclear project to the point of FID by the end of this Parliament, subject to clear value for money for both consumers and taxpayers and all relevant approvals.

*“We are pursuing large-scale nuclear, whilst also looking to the future of nuclear power in the UK through further investment in Small Modular Reactors and Advanced Modular Reactors.” (p12)*

It says the Ten Point Plan highlighted the fact that a large-scale nuclear power plant could support a peak of around 10,000 jobs during construction, and says the Government remains *“open to further projects later if the nuclear industry demonstrates that it is able to reduce costs and deliver to time and budget.” (p.48)*

*“We expect the sector to deliver the goal it set for itself in our Nuclear Sector Deal, published in 2018, to reduce the cost of nuclear new build projects by 30 per cent by 2030.”*

On Advanced Reactors, the Government *“will provide up to £385 million in an Advanced Nuclear Fund for the next generation of nuclear technology aiming, by the early 2030s, to develop a Small Modular Reactor (SMR) design and to build an Advanced Modular Reactor (AMR) demonstrator.” (p.50)*

£215m of this will be spent on developing a domestic SMR design that could potentially be built in factories and then assembled on site. The remaining £170m will be spent on an R&D programme on Advanced Modular Reactors (AMRs) – reactors which use novel cooling systems or novel fuels. The Government has also committed £400m to fund nuclear fusion with the aim of developing a commercially viable reactor by 2040. (Cumbria Local Enterprise Partnership is looking for the ideal site in Cumbria to house the first prototype nuclear fusion facility. (5))

The White Paper puts forward the view that nuclear sector makes a significant contribution to the UK economy - some £7 billion GVA in 2016. It alleges that the nuclear industry currently employs around 60,000 people. (p.56) The Government says it is working with the nuclear sector to develop a national and regional supply chain productivity improvement programme to achieve these objectives and target at least £2 billion of domestic and export contracts for UK companies by 2030. (p.58)

## **(c) Green Industrial Revolution?**

*“We are on the cusp of a green industrial revolution”,* says the Energy White Paper. Following on from the Ten Point Plan and the National Infrastructure Strategy the White Paper says the Government will further clarify measures to transform energy, support a green recovery, supporting thousands of green jobs and creating a fair deal for consumers giving us warmer and more comfortable homes. In other words, more statements and plans have yet to come.

The Government says it is committed to making the transformation fair and affordable, and that many low carbon technologies are already cheaper than fossil fuel alternatives.

A transport decarbonisation plan is to be published in the spring of 2021.

Action on energy, it says, will be compatible with our wider environmental objectives. However, the RSPB says Sizewell C which, if approved, would be built next door to the RSPB’s Minsmere Bird Sanctuary would be catastrophic for wildlife (6)

In 2019, greenhouse gas emissions from electricity generation were down 13% from 2018 and 72% from 1990. Support for low carbon generation has seen sustained falls in the cost of renewables. There are early signs of some renewables being deployed without Government subsidies.

*“Decarbonising the energy system over the next thirty years means replacing – as far as it is possible to do so - fossil fuels with clean energy technologies such as renewables, nuclear and hydrogen.” (p.9)*

The White Paper says there will be potentially a doubling of electricity demand and consequently a fourfold increase in low-carbon electricity generation. This discrepancy is not explained. (p.10)

As set out in the National Infrastructure Strategy, delivering the volume of private investment will require multiple policy levers and the right market frameworks to encourage competition and drive down costs. (p.10) No justification is given for these optimistic statements.

The Government estimates the measures in the White Paper could reduce emissions across power, industry and buildings by up to 230 MtCO<sub>2e</sub> in the period to 2032 – 40 from power and energy systems; 120 from buildings and 70 from industry - and support up to 220,000 jobs per year by 2030. No justification is given for these optimistic statements.

Key Government aims include:

- 40GW of offshore wind, including 1 GW floating;
- Supporting CCUS in 4 industrial clusters;
- Aiming to bring at least one new nuclear power station to final investment decision by the end of this parliament;
- Increasing heat pump installations from 30,000 a year to 600,000 by 2026;
- Developing 5GW of low carbon hydrogen production capacity by 2030;
- Requiring that all rented non-domestic buildings will be Energy Performance Certificate (EPC) Band B by 2030, barring lawful exceptions.

#### **(d) Smart Meters**

The White Paper states that smart meters can enable consumers to access innovative solutions such as smart tariffs, including 'time of use' tariffs. These tariffs reward consumers financially for using less electricity at peak times of demand or using more when overall demand is low and there is surplus generation available, for example on a sunny or windy weekend. Agile Octopus is a 'time-of-use' tariff. Sometimes prices even go 'negative' - meaning that consumers can be paid to use energy during that period. Octopus also cap prices at 35p/kWh to protect consumers during price spikes. Octopus is also trialling 323 Vehicle to Grid (V2G) chargers which allow consumers to charge their vehicle when prices are low; and sell electricity back to the grid at times of peak demand.

The White Paper says consumers can generate their own electricity through roof-top solar panels, store it in batteries, and even sell any excess power back to the grid to generate a profit at times of higher demand.

The White Paper says *“Local Authorities are key to delivering [smart local] systems by combining energy into their wider statutory work on housing, transport, waste and planning, making delivery more cost-effective and preparing for a net zero future. Government provides funding for Local Authorities to deliver programmes that support decarbonisation and will continue to work with communities to enable projects to be tailored and delivered to meet local needs.” (p.25)*

However, these statements re cooperation with local authorities fall far short of actual reality.

The White Paper says the switch to clean electricity has particularly profound implications. Separate networks for electricity, gas for heating and petrol or diesel for cars and vans, which today run independently of each other, will increasingly merge into one system, as electricity becomes the common energy currency. The electricity network is now becoming more decentralised, and there will be new sources of demand, as millions of EVs and heat pumps connect to the system. A previously one-directional system is transforming into something more dynamic. The transformation of the electricity system is an opportunity to exploit new forms of system flexibility in how energy is generated and consumed. (p.70)

In partnership with Ofgem, the Government will publish a new Smart Systems Plan in spring 2021, which will include a new framework for monitoring flexibility across electricity markets. The Ten Point Plan announced a further £100 million to address energy storage and flexibility innovation challenges, one of the key priority areas in the over £1billion Net Zero Innovation Portfolio. (p.73) Distribution Network Operators (DNOs) are already creating local flexibility markets. In 2020, they awarded contracts for around 1.2GW of flexibility services, including the first contracts to provide local services which pay households for using the aggregated electricity capacity from a collection of domestic batteries (p.74)

The Government is planning to legislate to enable competitive tendering in the building, ownership and operation of the onshore electricity network. It wants to see a competitive regime for onshore networks, where currently only incumbent network operators can build, own and operate network assets.

**(e) Fairness**

The members of the Climate Assembly UK identified "fairness within the UK, including for the most vulnerable" as one of the top two principles that should guide decisions around net zero. (p.30) The Government agrees and will publish a call for evidence on affordability and fairness before April 2021.

Households which self-generate electricity and store it, even sell it back to the grid, are currently able to reduce how much they pay towards the fixed costs of the electricity system, while still relying on the system when they are not self-supplying. This could leave other consumers to pay a greater share, some of whom may not be able to take advantage of new technologies.

HM Treasury has already launched a review of how the transition to net zero would be funded and where the costs would fall. An interim report will be published in December 2020, with a view to completing the review in spring 2021.

**(f) Electrical Power**

On electricity, the Government says it will invest £1bn to develop "technologies of the future" including advanced nuclear and hydrogen.

The Government has published a consultation on phasing out coal-fired generation sooner than the current target date of 2024.

The White Paper says:

*"We are not targeting a particular generation mix for 2050, nor would it be advisable to do so. We have already reduced power sector emissions 58 per cent between 2010 and 2018, and to stay on a course for a fully decarbonised system we will continue that progress through the 2020s and have an overwhelmingly decarbonised power system in the 2030s."* (p.42)

But ensuring the system is reliable, means intermittent renewables need to be complemented by technologies which provide power, or reduce demand when the wind is not blowing, or the sun does not shine. Today this includes nuclear, gas with carbon capture and storage and flexibility provided by batteries, demand side response, interconnectors. (p.43) "By 2050, we expect low-carbon options, such as clean hydrogen and long-duration storage, to satisfy the need for peaking capacity."

We will need sustained growth in the capacity of renewables over the next decade. The next CfD auction in late 2021 will be open to onshore wind, solar photovoltaics and other established technologies, as well as offshore wind. We aim to deploy around 12GW of low-cost renewable generation. Onshore wind and solar will be key building blocks of the future generation mix, along with offshore wind.

**(g) Biomass Energy with Carbon Capture and Storage (BECCS)**

By 2022, the Government will establish the role which Biomass Energy with Carbon Capture and Storage (BECCS) can play in reducing carbon emissions across the economy and, as part of a

wider biomass strategy. The CCC has estimated 75MtCO<sub>2</sub> of negative emissions could be required annually in order to reach net zero greenhouse gas emissions by 2050.

#### **(h) National Policy Statements on Energy**

The Government says it will complete a review of the existing energy National Policy Statements (NPS), with the aim of designating updated NPS by the end of 2021. (p.55)

#### **(i) Offshore Wind Jobs**

The Government intends to introduce more stringent requirements for the CfD supply chain plan process in order to support the delivery of the industry's target of 60 per cent UK content in offshore wind projects by 2030. It has announced a £160 million scheme and launched a competitive process in early December to support the development of offshore wind manufacturing infrastructure. (p.55)

The Government wants to see a five-fold increase in exports of offshore wind goods and services to at least £2.6 billion a year by 2030. The sector could bring £3 billion GVA a year by 2030, of which £1 billion is export related. (p.56)

#### **(j) Transport**

The UK will end the sale of new petrol and diesel cars and vans by 2030, ten years earlier than planned. The sale of hybrid cars and vans that can drive a significant distance with no carbon emissions will continue until 2035. (p.77)

The Prime Minister has announced around £1.3 billion to accelerate the rollout of charge-points for EVs in homes, workplaces, streets and on motorways across England, so people can more easily and conveniently charge their cars. And around £582 million in grants for those buying zero or ultra-low emission vehicles to make them cheaper to buy and incentivise more people to make the transition. Nearly half a billion to be spent in the next four years for the development and mass-scale production of electric vehicle batteries. (p.92)

#### **(k) Heat Pumps**

The Prime Minister's Ten Point Plan also set an ambition to reach 600,000 electric heat pump installations per year by 2028 (up from around 30,000 per year currently), as one option to accelerate the decarbonisation of heating. (p.79)

#### **(l) Buildings**

The plan is to eliminate emissions from domestic and commercial buildings by 2050. Tackling emissions from buildings will take many years to deliver but it is a journey which must start now.

The Government will publish a dedicated Heat and Buildings Strategy in early 2021 which will set out our ambitious plans in further detail, including the suite of policy levers that we will use to encourage consumers and businesses to make the transition. (p.101) The Ten-point plan included £1 billion of funding to support for the decarbonisation of buildings through improved energy efficiency. This will be allocated across several existing government schemes, including the Green Homes Grant Voucher Scheme, the Public Sector Decarbonisation Scheme and Social Housing Decarbonisation Fund. (p.102)

The Government wants as many existing homes as possible to hit EPC Band C by 2035, where practical, cost-effective and affordable. The Ten Point Plan extended the Public Sector Decarbonisation Scheme for a further year.

The Government will extend the Energy Company Obligation from 2022 to 2026 to support fuel poor consumers. (p.108)

To achieve net zero emissions, we will have to transition completely away from traditional natural gas boilers for heating homes on the gas grid. There are currently around 1.7 million fossil fuel boiler installations every year, but by the mid-2030s we expect all newly installed heating systems to be low-carbon or to be appliances that we are confident can be converted to a clean fuel supply. There is no single technology alternative to fossil fuels. Electric heat pumps and hydrogen, green

gas and shared heat networks all have their part to play. So, while we are clear on the eventual outcome, we will be flexible in how we achieve it, always looking for the most cost-effective, consumer-friendly approach and open to innovative solutions.

The Government consult in early 2021 over new regulations to phase out fossil fuels in off gas grid homes, businesses and public buildings, including a backstop date for the use of any remaining fossil fuel heating systems. (p.110)

We need to electrify heat in buildings in a way which reduces the need for additional generation and network capacity. This could mean using thermal, hot water or battery storage, potentially in combination with a smart time of use tariff, enabled by smart metering, to shift heating demand away from more expensive peak periods. (p.111)

#### **(m) Green Gas**

The Budget 2020 confirmed that a green gas levy would be imposed on gas suppliers to fund a new support scheme for biomethane. The costs of the levy are expected to be passed onto gas bill payers. We are considering the responses to our consultation on the green gas levy design and intend to publish a government response in early 2021. The Green Gas Support Scheme (GGSS) will probably be launched in autumn 2021. The GGSS can probably deliver 2.8TWh of renewable heat per year in 2030/31, the equivalent of the gas requirements roughly 230,000 homes. (p.112)

The Ten Point Plan said government and industry would evaluate hydrogen as an option for heating homes and workplaces and develop plans for a possible pilot hydrogen town before the end of the decade.

#### **(n) Heat Networks**

The Government is committing £122 million to fund a new Heat Network Transformation Programme and will implement local authority zoning by 2025.

Networks with low-carbon heat sources, such as waste-heat recovery, large heat pumps, solar thermal or possibly hydrogen boilers, will reduce emissions from heating and can help consumers with lower energy bills.

The Government will legislate in this Parliament for the regulation of heat networks to protect consumers and reduce carbon emissions. It will take powers to reduce the 90 per cent reliance on natural gas in heat networks, as well as enable consumer protection for heat network customers. (p.114) These powers will require heat networks to switch to low-carbon fuel sources as part of a natural replacement cycle, thereby minimising disruption to consumers connected to a network.

#### **(o) Carbon Capture Utilisation and Storage (CCUS)**

The White Paper wants to see the UK become a world leader in the deployment of carbon capture utilisation and storage (CCUS) and clean hydrogen supporting 60,000 jobs. The Government will invest £1 billion up to 2025 to facilitate the deployment of CCUS in two industrial clusters by the mid-2020s, and a further two clusters by 2030, supporting our ambition to capture 10MtCO<sub>2</sub> per year by the end of the decade.

The Government will publish an Industrial Decarbonisation Strategy in spring 2021 to set out the details of how the government will support the decarbonisation of manufacturing industry. (p.123)

#### **(p) Hydrogen**

The Government will publish a dedicated Hydrogen Strategy in early 2021 which positions the UK as a world leader in the production and use of clean hydrogen. The White Paper calls both hydrogen using carbon capture and storage and green hydrogen made by electrolysis “clean”. (p.127)

It says a variety of production technologies will be required to satisfy the level of anticipated demand for clean hydrogen in 2050. This is likely to include methane reformation with CCUS, biomass gasification with CCUS and electrolytic hydrogen using renewable or nuclear generated electricity. The aim is to develop 5GW of low-carbon hydrogen production capacity by 2030. (p.128)

**(q) Oil and Gas**

Finally, there' are some warm words about getting to net zero in the production of oil & gas, but nothing about continuing to dig the stuff out of the ground.

**4. References**

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