

## 1. Introduction

- 1.1. This submission is made by Unite, the UK's largest trade union with over one million members across all sectors of the economy, including, manufacturing, financial services, transport, food and agriculture, construction, energy and utilities, information technology, service industries, health, local government and the not-for-profit sector. Unite also organises in the community, enabling those who are not in employment to be part of our union.
- 1.2. Of particular relevance, to this submission, Unite represents almost 31,000 engineers and technicians in the Energy and Utilities sector carrying out every task from the most menial to the most highly skilled engineers and scientists in the country within the nuclear energy industry.

## 2. Observations

- 2.1. Unite believe that there is a dire need to act swiftly and decisively to tackle climate change while ensuring that the public are provided with the ability to heat and light their homes without having to pay more than 10% of their income to do so<sup>1</sup>. Unite would also like to see RIIO-3 delivered in a manner that prevents the privatised energy providers from profiteering and the workers be more involved in the transformation process.
- 2.2. Unite welcomes the desire to use every means available to provide supplies of energy to industrial and individual customers in a manner that utilises every reasonable avenue. Unite believes it is better to have a diverse mixture of sources of energy rather than placing all the eggs in one basket. Unite hopes that DESNZ will look into all greenhouse gas emissions of the whole energy supply chain when deciding which technologies to favour rather just examining CO<sub>2</sub> reductions than at point of use.
- 2.3. The amount of energy the UK currently obtains from fossil fuels is so high that no stone should be left unturned to find alternatives if we are to achieve net zero by the deadline. The UK has many options for energy generation not just at power facilities. Assistance is needed at these locations to encourage the delivery of energy back to the grid from these diverse sources in a way that does not incur such transformational losses. In order for this to happen, the grid needs to be transformed from the power lines set up in the 1960's to one more suited for the modern era.
- 2.4. For all the changes to occur to move from an economy based on carbon to one based on hydrogen and electricity, there needs to be the investment into the staff and importantly, the gathering and imparting of skills from experienced workers to new starters. Secretary of State for Energy Security Claire Coutinho said recently that the new hydrogen projects the current government was funding across the country, will boost our supply of clean home grown energy for use in buses, trains and local businesses. "By backing the UK hydrogen industry, we can support over 12,000 jobs and up to £11 billion in private investment by 2030." Unite believes this is a low estimate given the need for hydrogen in this country if we are to decarbonise. The 7 projects they were discussing in their announcement<sup>2</sup> have the potential to increase our capacity to make hydrogen by 800MW as a stepping stone toward their 10GW by 2030 goal. Unite believes that this goal is too low given the scale of the challenges ahead.

<sup>&</sup>lt;sup>1</sup> Government <u>Definition of fuel poverty</u>.

<sup>&</sup>lt;sup>2</sup> See article covering the announcement by <u>clicking here</u>

2.5 The chart<sup>3</sup> highlights the scale of the challenge. In a year 10GW of produce capacity could the equivalent of 7.53 million tonnes of oil, thus matching the equivalent of the country's energy input from natural gas in Q3 2023. Therefore, if we are to match the input of all fossil fuels in the year around 85GW of capacity would be and required enough power generation to supply it with



electricity. Given there hasn't been enough early investment into nuclear generation, our aging fleet will soon be reduced to just the output from Hinckley Point B. and when built Hinckley Point C. Since 2020 the actual generation has dropped from 0.75GW of realised capacity to just an average of 0.41GW of realised capacity<sup>4</sup> due to repairs and refuelling. Due to planning delays and prevarication this capacity will drop further before we see any recovery.

- 2.6. It takes around 10 years to jump through the hurdles for a new nuclear power station is given the green light and more to actually be built. Unite therefore believes that more should be done to accelerate the process by using an existing design and simply applying for the simultaneous construction of each in more than one site. This way if one obtains a clearer path than the others that can be started while the others are held up in the mire of appeals by the small number of local opposition campaigners.
- 2.7. Other methods of power generation also need to be considered in parallel just in case the nuclear projects are delayed. This could include utilisation of this countries natural tidal stream, lagoons and barrages for example, which, as the name suggests, are as predictable as the tides, and given the UK has some of the largest tidal reaches in the world, these are a resource that needs to be explored again.
- 2.8. Given the age profile of the current workforce and the manpower requirements for the transformation, time is running out. In a previous response on home and industrial heating Unite highlighted the scale of the challenge to move away from gas central heating to an alternative based on hydrogen or heat pumps<sup>5</sup>. In others Unite has stressed the need for greater insulation and energy economy, to stop energy wastage. To make these changes requires more of a war style footing to deliver the numbers of workers to complete the task.
- 2.9. Unite therefore believes in the need for a Just Transition of workers, to retain the skills of workers displaced due to the closure of work activities that are not environmentally sound to be deployed in areas where, with their assistance, can assist with the development of the energy industry to something we can be proud of. If the UK can lead the way, it can export that knowledge as an asset to guide other nations much in the way that it started the industrial revolution and industrialisation of generations.
- 2.10. This industrialisation needs be applied to the capture, utilisation, and storage of CO₂ and ideally its mineralisation. The United Nations' (UN) International Panel on Climate Change (IPCC), the UK's Committee on Climate Change (CCC) and many others agree that the time has passed when we can stand back and rely on nature-based solutions to global warming. We have already experienced a year that averaged 1.5°C above preindustrial levels of warmth, so we are now in an era when the fate of the planet rests on government decisiveness and action to industrially extract CO₂ from the environment at a rate the more than compensates for the volumes of greenhouse

<sup>&</sup>lt;sup>3</sup> The chart was taken from the Energy Statistics UK produced by the Office for National Statistics in December 2023 to highlight energy sources in the three months to September 2023.

<sup>&</sup>lt;sup>4</sup> Use the links to see the real generation from the <u>Hinckley Point B1</u> & <u>Hinckley Point B2</u> reactors. To convert the output to realised capacity in a year simply divide by 8,760. To convert GWh to Million tonnes of oil equivalent (Mtoe) divide by 11,630.

<sup>&</sup>lt;sup>5</sup> See the response on the Politics Home Unite the union pages <u>link</u>

gasses released. To do this there needs to be investment by central government of funds to at the very least attract investment and at worst fund the required changes. Nature-based solutions still need to be explored but the speed of required change demands action now not in 25 years' time.

2.11. In an open letter from Professor Piers Forster, Interim Chair of the CCC<sup>6</sup> he states that they "congratulate the Government on meeting the latest emissions target – the Climate Change Act is working. But the path ahead is tougher and we risk losing momentum if future legal targets are loosened on a technicality. The UK is already substantially off track for 2030 and the Government must resist the temptation to take their foot off the accelerator." "Achieving future carbon budgets will require a sustained increase in the pace and breadth of decarbonisation across most major sectors. Carbon Budgets One to Five were set when the country's 2050 goal was to reduce emissions by only 80%. That commitment has been raised to Net Zero by 2050, in line with global climate goals. It is essential that an ambitious path of emissions reduction is maintained, increasing in pace over the next decade."

## 3. Consultation Questions

Question 1: EN-6 applies only to GW scale projects. In this consultation we propose EN-7 applies to GW scale projects, and in addition SMRs and AMRs. What is your view on the government proposal to expand the range of technologies covered by the new nuclear NPS?

Please indicate the extent to which you agree or disagree with the question and provide any further comments.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree
- Not enough information

Please explain your answer (free text, 300 words)

3.1. As stressed earlier, there hasn't been enough early investment into nuclear generation, our aging fleet will soon be reduced to just one nuclear station unless there is a rolling programme of replacements. Ideally we should not fall into the trap of using the most up to date technology due to the delays that occur with the construction of the fleet. This was what happened with the MAGNOX fleet causing additional decommissioning costs as each one was slightly different. It is better to have a single design applied over a number of sites to reduce cost not only during decommissioning but also construction and operation. If EN-7 is to apply to these smaller reactors, Unite hopes that it will not be the case that multiple designs are utilised and instead the platforms should stick to a single modular design, from a proven source of high-quality products.

Question 2: EN-6 includes government assessed potential sites. In this consultation we propose EN-7 empowers developers to assess and identify potential sites using robust criteria. What is your view on the government proposal to shift its nuclear siting policy to a criteria-based approach. Please indicate the extent to which you agree or disagree with the question and provide any further comments.

- Strongly Disagree
- Disagree

<sup>&</sup>lt;sup>6</sup> The full letter can be found by <u>clicking here</u>

- Undecided
- Agree
- Strongly Agree
- Not enough information

Please explain your answer (free text, 300 words)

3.2. Unite agrees but has reservations. Much depends on just how robust the criteria is to legal challenge as there can be no doubt there will be some in the populous for whom the idea of a nuclear facility in close proximity will fill them with dread. Unite can envisage a situation of additional delays with this proposal as the public perception of big business decisions over that of the government. With big business the public know the idea is to generate profits while with a government decision the perception is that the project is for the public good. While we agree that the identification and initial assessment of potential sites could be one left to the business community, Unite feels that the decision to press ahead with one site or another should be down to the government.

Question 3: EN-6 includes a time limit on deployment of new nuclear power stations. In this consultation we propose EN-7 is not time restricted to support long-term planning. What is your view on the government proposal to shift its nuclear siting policy to an unrestricted timeframe approach?

*Please indicate the extent to which you agree or disagree with the question and provide any further comments.* 

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

• Not enough information Please explain your answer (free text, 300 words)

- 3.3. Unite strongly agrees with this idea to end the time limits of EN-6. Once approved, unless there is some mitigating factor to the landscape or proximity of neighbouring land the sites for future development can be earmarked for development and provide the foundations for a rolling nuclear industry construction programme.
- 3.4. Sites should not be in competition with sites for construction as the more we have the more resilient the UK is to external energy sector shocks like that caused by Vladimir Putin's Russia as retaliation for Western support for Ukraine. If excess sustainably generated power is produced over and above that of the UK's needs then this can be exported to fill the gaps in other nations move to a more sustainable future. In this way the UK could profit from our move toward sustainability and assist the UK balance of payments, improving our energy supply resilience making it the platform for investment by international business sustainable development.

Question 4: The NPS aims to deliver increased flexibility to diversify nuclear sites to help meet our Net Zero ambitions, while ensuring that siting of new nuclear power stations is appropriately constrained by appropriate criteria. To what extent do you agree that the key policy proposals outlined in this section (extending the NPS to new technologies, adopting a criteria-based approach to siting new developments, and by removing the deployment time limit to open up more siting) achieve these aims?

*Please indicate the extent to which you agree or disagree with the question and provide any further comments.* 

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

• Not enough information Please explain your answer (free text, 300 words)

- 3.5. History has taught us the lesson that diversification in the design of nuclear power stations is expensive throughout the life and decommissioning process. In an ideal world every nuclear power station should be to the same design to ensure there are volume discount savings obtained through using the same dies and forms repeatedly, rather than bespoke designs that cater to the demands for the locality, the whims of companies developing the project or the desire to use the most recent innovations. This lesson was painfully learned with Magnox.
- 3.6. Unite believe that the location has to suit the nuclear power station design rather than the other way round. If the government is suggesting that there should be a plethora of designs utilised then Unite has to oppose the suggestion. This is not a case where business knows best, as the programme creates a legacy during construction, operation and decommissioning that can last for decades, a legacy that cannot be guaranteed by any company due to the potential transitory nature of company law. The decommissioning costs inevitably lay with the taxpayer and hence Unite would have to oppose a situation where a company could construct a nuclear facility today that differs dramatically from the norm, increasing ultimately decommissioning costs for the tax payer.
- 3.7. That said if the "*flexibility to diversify nuclear sites*" only applies to the location then Unite would have to agree that having a wider range of potential locations for nuclear facilities can only be beneficial. Clearly any diversification would ultimately need to be safe both with respect to the local population, site security and site safety which ultimately will be tested through the planning permission process.

Question 5: Do you agree that legislation should be brought forward to include all nuclear fission projects within the NSIP regime in England, including reactors with a generating output of less than 50MW and reactors that only produce heat or synthetic fuels such as hydrogen?

*Please indicate the extent to which you agree or disagree with the question and provide any further comments.* 

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree
- Not enough information

Please explain your answer (free text, 300 words)

- 3.8. Unite believe that the we face a potential shortfall in generational capacity in the UK where we will become dependant on other nations for our energy supplies, due to the swift transition away from fossil fuels. The inclusion of nuclear facilities created for whatever purpose need to be driven at pace given size of the issue as highlighted earlier.
- 3.9. Unite agrees that it is desirable to reduce greenhouse gas emissions as swiftly as possible, but feel that more can be done to provide some existing sites with lifeline extensions by changing fuels, adding carbon capture technology, etc. This is not always technically possible of course due to issues with the alternatives such as supply availability/sustainability/ecology; the potential to create back pressure reductions in output capacity and other such problems. Therefore, Unite accepts that this potential to extend the life will not ably everywhere but should non the less be examined objectively on the basis of the need to ensure the energy security for the UK.

Question 6: Do you have any evidence or technical information regarding fission reactors which only produce heat or synthetic fuels that may be useful to help inform whether they should be included in the nuclear NPS beyond 2025? (Free text, 300 words)

- 3.10. Unite would point out that every reactor only generates heat and it is what is done with that heat and how it is transferred and utilised that forms the basis of a nuclear facility. If the heat is transferred through a heat exchanger to water it will create steam to operate a turbine that steam. This steam then needs to be cooled so that it can be returned to the reactor through a secondary heat exchanger to keep the heat produced at a manageable level and the radiation under control. It is the heat transferred from this second cooling system that generally is used for other purposes.
- 3.11. Direct Air Capture (DAC) facilities extract Carbon Dioxide (CO<sub>2</sub>) from the atmosphere, utilising an amine, which when heated releases the CO<sub>2</sub> to storage or utilisation. Seawater contains a far higher concentration of CO<sub>2</sub> and this too will release CO<sub>2</sub> when heated. As seawater is already being warmed by seawater cooled nuclear power stations, there is a huge potential to capture this carbon and store it, without the need to use further separation.
- 3.12. Heating of water makes the electrolysis process far more efficient. Super critically heating water or any substance<sup>7</sup> will also cause it to break down into their constituent elements. Initially this biomass will be in the form of Syngas (Carbon Monoxide and Hydrogen) that through the Fisher Tropsch process<sup>8</sup> (FT) can be transformed into synthetic crude oil. Through the normal refining and cracking process the synthetic oil can be extracted as anything that would previously obtained from crude oil. Any residue can be sent back to the pyrolysis chamber to be transformed into more Syngas.

Question 7: Do you agree that we have correctly identified the criteria that are impacted by our proposed key policy changes?

*Please indicate the extent to which you agree or disagree with the question and provide any further comments.* 

• Strongly Disagree

<sup>&</sup>lt;sup>7</sup> This is a process called <u>pyrolysis</u>

<sup>&</sup>lt;sup>8</sup> The link provide more detail on the <u>Fischer Tropsch</u>

- Disagree
- Undecided
- Agree
- Strongly Agree
- Not enough information

Please explain your answer (free text, 300 words)

Questions 7a-7d. If you wish to, please provide any comments to further expand on or explain your responses to the question in this section in relation to the following: (free text, 300 words)

7a - Flooding, tsunami and storm surge and coastal processes

7b - The default position for consideration of flood risk is that developers should first consider alternative sites or solutions at the national level unless there is a policy reason why the scope should be narrowed to focus on the regional or local level instead. Where flood or coastal erosion risk is identified, and an alternative site is not viable, options and mitigations will be considered in more detail through the flood risk assessment. We intend to consider whether there is policy justification to narrow the focus to a more regional or local level as part of the NPS, but would welcome any suggestions or evidence that would support our consideration and help us to define their scope.

7c - Locational characteristics and population densities

7d - Other criteria that are impacted upon that have not been identified above

- 3.13. Unite agrees that the above criteria are key factors. Others are geology and mining activities in the locality. Although not known for geological disturbances, the UK does suffer the odd rare low level of earthquakes. As such Unite would suggest that these are examined too. Equally not all mining activities were recorded and therefore ground surveys should ensure against geological disturbances as a result of passed mining activity.
- 3.14. Finally the UK has a rich historical record and Unite would not wish to see historical sites of special significance disturbed or at the very least go unrecorded, despite the importance of energy in the modern era.

Question 8: Do you agree that we have correctly identified that these criteria are embedded in EN-7, EN-1 and within wider guidance?

*Please indicate the extent to which you agree or disagree with the question and provide any further comments.* 

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree
- Not enough information

Please explain your answer (free text, 300 words)

Questions 8a-8c. If you wish to, please provide any comments to further expand on or explain your responses to the question in this section in relation to the following: (free text, 300 words) 8a - Climate change resilience and adaptation

- 8b Groundwater protection
- 8c Other criteria that should be considered for discounting that have not been identified above
- 3.15. Unite strongly agrees that the other main environmental criteria are covered.

Question 9: Do you agree that we have correctly identified that these criteria do not require any significant development?

Please indicate the extent to which you agree or disagree with the question and provide any further comments.

Questions 9a-9h, If you wish to, please provide any comments to further expand on or explain your responses to the question in this section in relation to the following: (free text, 300 words) 9a - Proximity to military activities

- 9b Proximity to major hazard sites and major accident hazard pipelines
- 9c Proximity to Civil Aircraft Movements
- 9d Nationally and internationally designated sites of ecological importance
- 9e Areas of amenity and landscape value and Cultural heritage
- 9f Size of site to accommodate operation
- 9g Access to suitable sources of cooling
- 9h Other criteria that are without significant development but have not been identified above
- 3.16. Unite disagrees that the other environmental criteria are covered. However, civil aviation movements are listed it needs to be remembered that direct paths of aircraft from A to B is the ideal to reduce emissions and reduce fuel consumption. If this fuel is fossil based, then any diversion to avoid a nuclear facility overflight should be discouraged. Nuclear facilities are designed to take a direct hit from the largest aircraft on record even it would struggle to get airbourne due to the mass onboard. Therefore the sites should not consider civil aviation routes a limiting factor for the nuclear facility or aviation industry.
- 3.17. In general, nobody wants to live next to a nuclear facilities despite all the safety provisions. Therefore, the areas generally become havens for wildlife and the preservation of "ecological *importance*". Given the protections of the nuclear facilities designs major hazardous pipelines are not an issue even if they dramatically rupture next to the reactor building. There is an equally obvious need to protect staff working in the proximity to any hazard but other than that, this too could be an unnecessary precaution.
- 3.18. Unite believes that access to cooling sources and the size of the site are the only ones in this list that cannot be mitigated in some way.

Question 10: Do you agree with the approach we have proposed in regard to the other matters that were considered in EN-6 and will need considering in EN-7?

Please indicate your levels of agreement with the position set out in the Consultation.

Please indicate the extent to which you agree or disagree with the question and provide any further comments.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree
- Not enough information

Please explain your answer (free text, 300 words)

Questions 10a-10f. If you wish to, please provide any comments to further expand on or explain your responses to the question in this section in relation to the following: (free text, 300 words) 10a - Merits of a nominated site in comparison to other alternative solutions: Do you have any suggestions or evidence for what should or should not be included as part of the government's consideration of reasonable alternatives at the strategic level?

- 10b Radioactive waste management
- 10c Impacts of multiple reactors
- 10d Ownership of sites
- 10e Biodiversity Net Gain
- 10f Other matters that should be considered further as part of the criteria-based approach.
- 3.19. Unite agrees that the other issues are a factor that needs to be addressed.

Question 11: The 'Implementation' section describes how the new policy approach will be implemented. What are your views on the proposed model for implementation? Please indicate the extent to which you agree or disagree with the question and provide any further comments.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree
- Not enough information

Please explain your answer (free text, 300 words)

3.20. Unite agrees that the proposed implementation model procedure looks to be appropriate.

Question 12: What, if any, help from government or GBN1 would you expect to see to support developers with site identification? (free text, 300 words)

3.21. Unite would hope to see the government work in collaboration with developers of such facilities, using data that has previously been obtained by government bodies from across the spectrum. The goal is to commission, construct and deploy the generation capacity as swiftly and efficiently as possible to mitigate the reduction in generation capacity from fossil

fuels and reach Net Zero as quickly as is possible. Therefore any and all reasonable assistance should be made available to developers.

Question 13: Is there any additional information, perspective, or consideration that you believe is important to the development of the nuclear NPS, which may not have been adequately addressed or is missing from the consultation document? Please share your insights and suggestions. (Free text, 300 words)

3.22. Unite would hope to see the government work with the trade unions to ensure the Just Transition<sup>9</sup> of workers from closing facilities back into productive work to tackle the environmental crisis. Even if the method of heat generation is different, there will be skilled individuals who know how to keep a power stations output in synchronisation with that of the National Grid. It takes time and money to train workers from scratch, and hence it makes perfect sense to develop a passporting system to allow qualified workers to move between say a closing coal fired station into a nuclear facility. Sadly, however, this capture of skilled workers has not happened to date, but Unite hopes that the lessons of the past will allow for a smoother transition today and into the future.

Question 14: Please identify the sectors or interests you represent in relation to the siting of new nuclear power stations. (Select all that apply):

- Member of the general public
- Local community member in the vicinity of potential or existing nuclear installation
- Organisation responsible for/interested in new nuclear development.
- New nuclear development supply chain organisation
- Environmental advocate
- Energy business or industry, professional or expert
- Regulator
- Nuclear energy professional or expert
- Academic or researcher
- Local authority/government representative
- National government representative
- Non Government Organisation
- Other (free text, 30 words)
- 3.23. Unite the union is a Trade Union as indicated earlier but also those areas as indicated in the introduction.

<sup>&</sup>lt;sup>9</sup> As defined by the UN's International Labour Organisation. Please see the <u>link</u> 10 of 11 08/03/2024

## 4. Conclusion

- 4.1. Unite the union hopes that there will be a smooth transition to create a new fleet of nuclear facilities for its workers. Unite does not subscribe to the idea or desire to see the 'business know best' approach to prevail especially given what is at stake. Equally Unite does not believe in the idea that competition creates the best solution given the lessens of the past and its far from desirable outcomes and failures. A race to the bottom is not what the government should be pursuing when it comes to the generation of nuclear power.
- 4.2. Unite does however realise the urgency to provide the UK with power, green hydrogen and with the industrial removal of greenhouse gasses from the atmosphere be they from energy generation or otherwise, given the climate crisis we face. Unite therefore supports the basic idea of the inclusion of new nuclear facilities into a list of nationally important infrastructure.

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