

**Regulation 6(1)(b) - Information already publicly available**

Under regulation 6(1)(b) of the EIRs, we do not have to give you information which is already publicly available and easily accessible to you in another form or format.

Where information is already publicly available I have provided you with the links to the relevant websites. If, however, you do not have internet access to obtain this information from the websites listed, then please contact me again and I will send you a paper copy.

Some of the information you have requested can be found online here:

- [Written question and answer: S6F-03246 | Scottish Parliament Website](#)
- [Written question and answer: S6W-27669 | Scottish Parliament Website](#)
- [Written question and answer: S6O-03263 | Scottish Parliament Website](#)
- [Written question and answer: S6O-02958 | Scottish Parliament Website](#)
- [Meeting of the Parliament: 16/05/2024 | Scottish Parliament Website](#)

**Regulation 10(4)(e) - Internal communication**

While our aim is to provide information whenever possible, in this instance an exception under Regulation 10(4)(e), internal communication, has been applied to some of the information requested.

This exception is subject to the 'public interest test'. Therefore, taking account of all the circumstances of this case, we have considered if the public interest in disclosing the information outweighs the public interest in applying the exception.

We have found that, on balance, the public interest lies in favour of upholding the exception. We recognise that there is some public interest in releasing the information as part of an open, transparent and accountable government. However, this is outweighed by the greater public interest in allowing Scottish Government officials and ministers a private space to share free and frank views for the purpose of deliberation of any given policy and by a strong public interest in maintaining the right to confidentiality of communications between legal advisers and clients, to ensure that Ministers and officials are able to receive legal advice in confidence, like any other public or private organisation.

**Regulation 11 - Personal Data**

A small amount of information has been redacted under Regulation 11 (Personal Data), as it contains personal information and disclosing it would contravene the data protection principles in Article 5(1) of the General Data Protection Regulations (GDPR) and in Section 34(1) of the Data Protection Act 2018.

This exception is not subject to the 'public interest test'.

[REDACTED: REGULATION 11(2)]  
Environment and Forestry/Environmental Quality and Resilience  
21 August 2024

**Cabinet Secretary for Net Zero and Energy**

**UK APPLICATION REGARDING NEW FORMS OF NUCLEAR TECHNOLOGY**

**Priority and Purpose**

1. To seek your view regarding the Scottish Government's approach to applications made, under the Justification of Practices Involving Ionising Radiation Regulations 2004, for new forms of nuclear fission based technologies.
2. The priority is routine.

**Recommendation**

3. [REDACTED: REGULATION 10(4)(e)]
  - a. [REDACTED: REGULATION 10(4)(e)]  
[REDACTED: REGULATION 10(4)(e)]

**Context and Issues**

4. Established international principles from the recommendations of the International Commission on Radiological Protection set out that before any new type of practice involving ionising radiation can be introduced, government must first assess it to determine whether the individual or societal benefit outweighs the health detriment it may cause. For example, the use of a small radioactive source in smoke detectors is considered justified because its main purpose is to save lives in event of a fire. The Justification of Practices Involving Ionising Radiation Regulations 2004 (JOPIIRR) are UK wide regulations which set the framework for considering new types of relevant activity. These Regulations also implement requirements in Council Directive 2013/59/Euratom laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation to ensure that new classes or types of practices resulting in exposure to ionising radiation are justified before being adopted,
5. Scottish Government entered into a Concordat in 2018 on the implementation of JOPIIRR which sets a single UK wide framework and process, including communication and co-operation between the four Justifying Authorities – UK, Welsh, Northern Irish and Scottish Ministers. The Concordat sets out that the UK Government will lead the co-ordination of new justification applications. In devolved areas, we retain the ability to make our own decisions, although guidance developed to support JOPIIRR sets out that the Justifying Authorities will strive to make consistent decisions. The guidance also sets out that in reserved areas the UK Government will consult and take into account the views of Devolved Governments before coming to a decision.
6. New justification applications are not common. However, UK Government policy to pursue new nuclear energy generation in England and Wales has prompted three

new applications for new designs of fission based nuclear technology, including an application from the Nuclear Industry Association (NIA) for *'the generation of energy from nuclear fission using mixed oxide fuel in the lead-cooled fast reactor'* and subsequent applications from Rolls Royce and Last Energy for Small Modular Reactors. Existing nuclear energy generation is based on designs of fission reactor which have previously been justified. These applications are for new designs of reactor and so require consideration under JOPIIRR.

7. The UK Government has initiated processes under JOPIIRR including the formation of the UK wide Joint Liaison Group (JLG) set out in the Concordat. Officials in ENFOR are lead members of the JLG and work with substantive policy leads, in this case from DECC, [REDACTED: REGULATION 10(4)(e)]. UK Government officials have set out a process that will take approximately two years to consider each application including two public consultation exercises and have indicated that there will likely be a number of other applications coming forward for new developments in relation to new nuclear-based energy generation. We have noted that the process of justification is based on consideration of the benefits versus the detriments of the technology and **there is nothing in the application or the justification process in and of itself that would obligate Scotland to host new nuclear sites in any case.** [REDACTED: REGULATION 10(4)(e)]

8. The new applications relate to a different form of fission based technology, however, similar detriments relevant to traditional fission still apply, including potential safety risks and environmental concerns due to radioactive waste generation. Therefore, the Scottish Government's main objections to fission based nuclear energy generation and longstanding policy position still apply. We have not attached the applications here as they run to hundreds of pages of technical detail but can provide further information if helpful.

9. [REDACTED: REGULATION 10(4)(e)]  
**Options Considered and Advice**

10. [REDACTED: REGULATION 10(4)(e)]

11. [REDACTED: REGULATION 10(4)(e)]

### **Assessment of Options**

12. [REDACTED: REGULATION 10(4)(e)]

13. [REDACTED: REGULATION 10(4)(e)]

### **Contribution to the Government's Three Missions**

14. None identified.

### **Delivery**

15. As set out above.

### **Verity House Agreement Implications**

16. None identified.

**Financial Considerations**

17. None identified.

[REDACTED: REGULATION 10(4)(e)]

18. [REDACTED: REGULATION 10(4)(e)]

19. [REDACTED: REGULATION 10(4)(e)]

**New Deal for Business Implications**

20. None identified.

[REDACTED: REGULATION 10(4)(e)]

21. [REDACTED: REGULATION 10(4)(e)]

22. [REDACTED: REGULATION 10(4)(e)]

**Quality Assurance**

23. This advice has been developed with DECC colleagues and approved by Anne Aitken, Deputy Director for Environmental Quality and Resilience.

**Conclusion and next steps**

24. If you are content with the recommendations, we will inform UK Government officials of our position in writing as soon as possible.

[REDACTED: REGULATION 11(2)]

ENFOR/EQR

[REDACTED: REGULATION 11(2)]

Cabinet Secretaries and Ministers Copy List	For Action	For Information Portfolio interest	For Information Constituency interest	For Information General awareness

Officials Copy List
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## NUCLEAR BRIEF/LINES

Last updated by policy: 23 August 2024  
Last checked by OCEA:

### Lead contact/s

[REDACTED: REGULATION 11(2)][REDACTED: REGULATION 11(2)]  
[REDACTED: REGULATION 11(2)]

Nuclear energy is a low-carbon alternative to fossil fuels Scotland has a long history of nuclear research and electricity generation. Nuclear energy accounted for 30% of electricity generated in Scotland in 2021. Scotland has one EDF-owned nuclear station currently generating electricity, Torness, and four Nuclear Decommissioning Authority-owned civil nuclear sites at advanced stages of decommissioning, at Dounreay, Chapelcross, and Hunterston A and B.

### Contents

1. TOP LINES .....	2
2. COST OF NUCLEAR COMPARED TO ALTERNATIVES .....	2
3. NUCLEAR GENERATION IN SCOTLAND .....	2
4. JOBS IN NUCLEAR ENERGY .....	2
5. IMPACT OF REDUCING NUCLEAR POWER ON ENERGY SECURITY AND NET ZERO .....	3
6. ENVIRONMENTAL CONCERNS .....	3
7. UK GOVERNMENT POSITION ON NUCLEAR ENERGY .....	4
8. TORNESS .....	4
9. INTERNATIONAL NUCLEAR POLICY .....	6
10. DECOMMISSIONING .....	6
11. ADVANCED NUCLEAR TECHNOLOGIES – AMRs and SMRs .....	7
12. NUCLEAR FUSION .....	7
Annex A PREVIOUS PQS .....	9
Annex B: Further background information .....	12
COST OF NUCLEAR EXPANDED FIGURES .....	12
UK POSITION BEFORE RECENT ELECTION .....	13
HINKLEY POINT C .....	14
SIZEWELL C .....	15
COST OVERRUNS AND DELAYS OF EDF EPR PROJECTS .....	17
NUCLEAR FUNDING MODELS .....	17
ANNEX C .....	19

## 1. TOP LINES

- **The Scottish Government’s position on traditional fission nuclear energy is clear: we do not support the building of any new nuclear power stations in Scotland under current technologies.**
- We recognise the contribution that nuclear generation makes to the current energy mix in Scotland; however, its contribution is set to decrease as we increase electricity generation from renewable and other low carbon sources.
- New nuclear is expensive. In 2013 the UK Government awarded a Contract for Difference for 35 years for Hinkley Point C, at £92.50 per MWh (in 2012 prices). This is significantly higher than the strike prices set for solar, and onshore and offshore wind in the March 2024 allocation round.
- New nuclear power would take years, if not decades, to become operational and would also be expensive.
- Significant growth in renewables, storage, hydrogen and carbon capture provides the best pathway to net zero by 2045 and will deliver affordable, resilient and clean energy supplies for Scotland.
- Nuclear energy creates radioactive waste which must be safely managed over many decades while protecting people and the environment.

## 2. **COST OF NUCLEAR COMPARED TO ALTERNATIVES**

- The Contract for Difference price awarded for Hinkley Point C (£92.50 per MWh) is significantly higher than the strike prices set for solar, and onshore and offshore wind, in the March 2024 allocation round, at £61, £64, and £73 per MWh (in 2012 prices) respectively.
- Levelised costs of Electricity estimates from the UK Government show how expensive nuclear power is relative to alternatives (central cost estimates):
  - New nuclear: £109/MWh
  - Offshore Wind: £44/MWh
  - Onshore Wind: £38/MWh
  - Large-scale Solar: £41/MWh

## 3. **NUCLEAR GENERATION IN SCOTLAND**

- **In 2022, 7.9 TWh of electricity was generated from nuclear power in Scotland. This accounted for 15.8% of the total electricity generated in Scotland in 2022. Meanwhile, 71% of electricity generated in Scotland in 2022 was from renewable sources.**
- In 2022, 35.7 TWh of electricity was generated from renewable sources in Scotland in 2023, and Scotland’s net exports of electricity was 18.7 TWh.
- At the start of 2024, there was 15.4 GW of renewable electricity capacity in Scotland – a 15% increase from 13.4 GW in Q1 2022.
- At the start of 2024, there is an estimated capacity of 47.1 GW of renewable electricity projects in the planning pipeline.

#### **4. JOBS IN NUCLEAR ENERGY**

- Our upcoming Energy Strategy and Just Transition Plan will set out how we will support workers to take advantage of the enormous opportunities offered by the net zero energy transition.
- Based on independent analysis from Ernst and Young (EY), low carbon and renewable energy could support nearly 80,000 jobs in Scotland by 2050.
- The nuclear energy workforce has contributed significant value to Scotland's economy and local communities over many decades.
- Decommissioning Scotland's nuclear sites will take decades and will require the retention of a highly skilled workforce. Our National Planning Framework 4 supports the redevelopment of Hunterston and Chapelcross sites and notes opportunities to repurpose existing assets to create greener jobs.

##### Background:

- According to the Nuclear Industry Association's annual Jobs Map, 3,676 people were working in the sector across Scotland in 2023, up slightly compared to 2022, but down 8% compared to its 2018 level.
- 1,070 people work at the Torness and Hunterston B power station sites, with a further 430 full time contractors. Hunterston B moved into the decommissioning phase in 2022 after 46 years of service.
- Scotland has globally renowned expertise in decommissioning, with over 400 people working at Dounreay on the Thurso coast

#### **5. IMPACT OF REDUCING NUCLEAR POWER ON ENERGY SECURITY AND NET ZERO**

- Continued growth in renewables, storage, hydrogen and carbon capture technologies provides the best pathway to net zero.
- The National Grid Electricity System Operator conducted a study of the effects of earlier than expected closure of nuclear generation in Scotland, which concluded that the system would remain secure.<sup>1</sup>
- Modelling underpinning the Climate Change Plan and the draft Energy Strategy and Just Transition Plan shows that the closure of Hunterston B and Torness power stations can be compensated for by the expansion of renewables and storage technologies instead of increased unabated fossil fuel generation.

#### **6. ENVIRONMENTAL CONCERNS**

- Nuclear energy creates radioactive waste which must be safely managed over many decades while protecting people and the environment.
- The Scottish Government does not agree with the UK Government's assertion that nuclear energy is 'environmentally sustainable'.
- Nuclear power stations require nuclear material for their operation and generate radioactive waste, both of which can involve hazardous radiation and require complex and expensive handling for security as well as public health and environmental protection.
- In addition, radioactive waste can remain dangerous for thousands of years and must be managed and stored securely to prevent environmental contamination or harm to the public.

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<sup>1</sup> Chapter 5: Creating the conditions for a net zero energy system - Draft Energy Strategy and Just Transition Plan - gov.scot ([www.gov.scot](http://www.gov.scot)) – Quoted in ESJTP but report not retrievable.

## **7. UK GOVERNMENT POSITION ON NUCLEAR ENERGY**

### **UKG's position**

- The UK government has claimed that nuclear power is a “critical part” of the UK's energy mix and pledged to get stalled projects over the line.
- In Labours' manifest the party has claimed that they will ensure the long-term security of the sector, extending the lifetime of existing plants, and we will get Hinkley Point C over the line.
- New nuclear power stations, such as Sizewell C, and Small Modular Reactors, will play an important role in helping the UK achieve energy security and clean power while securing thousands of good, skilled jobs.
- The Scottish Government does not agree with the UK Government's (nor EU's)<sup>2</sup> assertion that nuclear energy is ‘environmentally sustainable’.
- While nuclear energy creates radioactive waste which must be safely managed over many decades while protecting people and the environment.
- Consequently, we do not believe nuclear should be classified as environmentally sustainable.

### **Great British Energy**

- The UK Government have introduced the Great British Energy Bill to Parliament and have announced their intentions for Great British Energy, a publicly-owned company headquartered in Scotland to invest in clean, home-grown energy.
- Scotland has an established track record in promoting renewable energy. We are at the forefront of the development of renewables technology and export a significant portion of our energy, particularly from wind power.
- The Scottish Government welcomes that this has been recognised by the UK Government through its decision to locate the headquarters of Great British Energy in Scotland.
- In initial engagements with the UK Government, SG has made clear the expectations that Great British Energy must deliver real benefits for the people of Scotland and support Scotland's ongoing efforts for a just transition and to reach net zero by 2045.
- “Whilst there is a great deal of agreement between the two Governments on many of the priorities that have been identified, one area where we diverge is on new nuclear power stations. We are clear that UK Government's intended investment in nuclear should instead be used to bolster further renewables.

## **8. TORNESS**

### **EDF's plans to extend the operational lifetime of Torness Power Station**

- The Scottish Government recognises the significant value that Torness and its workforce has contributed to Scotland's economy and East Lothian over many decades.
- The Scottish Government supports extending the operating lifespan of Torness if strict environment and safety criteria continue to be met.

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<sup>2</sup> EU taxonomy: Complementary Climate Delegated Act to accelerate decarbonisation - European Commission (europa.eu)



- Prolonging the life of this station could help to ensure Scotland retains a secure energy supply while we increase the proportion of energy generated by renewables and cleaner thermal generation technologies.

#### Background:

- Torness is Scotland's last remaining nuclear fission power station. In 2022, EDF announced it would bring forward the decommissioning date of Torness Nuclear Power Station from 2030 to 2028 due cracking in the graphite cores.
- According to EDF, Torness supports 500 full-time employees and around 250 contractors, and contributes around £45 million to the local economy (2023).
  - Torness is included in EDF Energy's plans to extend the lives of its operational nuclear power stations in the UK. These plans would total around £1.3 billion in investment.
  - The plans are subject to approvals by safety regulators as well as rigorous safety inspections.
  - Dr Mark Hartley, managing director of EDF's nuclear operations business, said the firm wanted its advanced gas-cooled reactors (AGRs) at the plants to "maintain output... for as long as possible".

#### **9. Hunterston B nuclear power station:**

- The Scottish Government recognises the significant value that Hunterston B and its workforce has contributed to Scotland's economy and in the North Ayrshire community over many decades.

##### Background

- The Hunterston B nuclear power station is undergoing defueling at the moment with the completion of defueling of Reactor 3 in September of last year and with the aim to declare the site fuel free in 2025.
- Nuclear material/fuel is a reserved issue and so all nuclear fuel will be transported to Sellafield in Cumbria for storage.
- Once defueling is complete and the necessary authorisations are in place the site will transfer to the Nuclear Decommissioning Authority (NDA), who also operate the adjacent Hunterston A site, for decommissioning.
- The decommissioning phase will likely take many years of work, for comparison Hunterston A ceased energy generation in 1990 and is still in the process of decommissioning.
- Decommissioning will generate a range of radioactive waste that must be managed safely and securely.
- When Hunterston enters the decommissioning stage, it will support 244 full-time employees, this is a reduction of less than a third from the current headcount.
- The site will provide options open to staff like retirement or voluntary redundancy with enhanced terms like which means there may not be any compulsory redundancies.
- Their view that the recent energy crisis shows we need a diverse mix of low carbon sources, including nuclear, to ensure energy security.
- That EDF respects the Scottish Government's position on nuclear, but it is important to recognise the role nuclear (and its workforce) has played in decarbonising electricity generation in Scotland.

- The station employs approximately 520 full time EDF employees plus over 250 full time contract partners
- Hunterston B ceased energy generation in 2022 after 46 years of service.
- The first phase of decommissioning, the Preparations for Quiescence phase is anticipated to start at the end of defueling in 2025 (with formal handover of the site to NRS expected in 2026)
- Decommissioning Scotland's nuclear sites will take decades and will require the retention of a highly skilled workforce. Our National Planning Framework 4 supports the redevelopment of Hunterston (and Chapelcross) sites and notes opportunities to repurpose existing assets to create greener jobs.

## **9. INTERNATIONAL NUCLEAR POLICY**

- Member states of the EU have a wide range of views on the use of nuclear energy, and we are aware that policy is evolving across member states.
- Many are opposed to nuclear power, including Austria, Denmark, Ireland, Italy, Estonia, Latvia, Luxembourg, Malta, and Portugal. Several other member states, including Spain, have plans to phase out nuclear power.
- While twenty four countries committed to tripling their nuclear capacity at COP28, around 140 countries have pledged to reach net zero, with the majority not relying on nuclear energy to do so [Source: BBC, 27 November 2023].

## **10. DECOMMISSIONING**

- The Scottish Government places great importance on the need to address Scotland's radioactive waste legacy and is committed to the safe, secure and responsible management of waste with care for people and the environment.
- Scotland has a highly complex and challenging nuclear decommissioning and radioactive waste landscape.
- We work closely with partners including SEPA, ONR and the Nuclear Decommissioning Authority (NDA) to ensure the efficient and effective management of radioactive substances and nuclear decommissioning in Scotland.
- Scotland, like other countries in the UK, is required to develop policy and regulatory frameworks to ensure the safe management of radioactive waste on its territory. This is an obligation as set out in the international Joint Convention on Radioactive Waste Management.
- The Scottish Government has a clear policy for the management of Higher Activity Radioactive Wastes. Our policy is that the long-term management of higher-activity radioactive waste should be in near-surface facilities located as near as possible to the site where the waste was produced.

## **11. ADVANCED NUCLEAR TECHNOLOGIES – AMRs and SMRs**

- Advanced Nuclear Technologies encompass a wide range of nuclear reactor technologies under development, from smaller versions of the dominant power reactor technologies such as Pressurised Water Reactors (PWRs) and Boiling Water Reactors (BWRs), through reactor technologies that have only been built as prototype or demonstration reactors to reactor technologies that have only ever existed on paper.

- These technologies do share common attributes:
  - smaller than conventional nuclear power station reactors.
  - designed so that much of the plant can be fabricated in a factory environment and transported to site, reducing construction risk and making them less capital-intensive,
  - All rely on nuclear fission, not fusion.
- Generally advanced nuclear technologies fall into one of 2 groups:
  - Generation III water-cooled SMRs, similar to existing nuclear power station reactors but on a smaller scale;
  - Generation IV and beyond AMRs, which use novel cooling systems or fuels to offer new functionality (such as industrial process heat) and potentially a step change reduction in costs.<sup>3</sup>
- Whilst Small Modular Reactors (SMRs) and Advanced Modular Reactors (AMRs) are innovative in – for example – their size, fuels, or construction technique, they use the same method of electricity generation as traditional nuclear fission.
- This means the same environmental concerns as traditional nuclear power plants and their economic competitiveness is still to be proven in practice, once deployed. Lead in times are also long, even if shorter than traditional nuclear power stations.

## 12. NUCLEAR FUSION

- We are aware of increasing interest in the development of fusion energy – which is different from traditional nuclear energy due to the potential for significantly fewer toxic by-products.
- The Scottish Government’s position on traditional fission nuclear energy has not and will not change. We don’t support the building of any new nuclear power stations in Scotland under current technologies.
- We will continue to assess any new technologies based on safety, value for consumers, and contribution to Scotland’s low-carbon economy and net zero energy future.
- We are clear though that there is a long way to go in terms of fully understanding both the risks and opportunities that fusion energy technology presents.
- The generation of electricity at any selected site would need the relevant consents, which for electricity generation in Scotland would fall to Scottish Ministers, as well as any Environmental Impact Assessments required under the relevant legislation

### Annex A PREVIOUS PQS

[Redacted Reg 6(1)(b)] – See Annex A for link  
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 [Redacted Reg 6(1)(b)] – See Annex A for link  
 [Redacted Reg 6(1)(b)] – See Annex A for link  
 [Redacted Reg 6(1)(b)] – See Annex A for link

### Annex B: Further background information

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<sup>3</sup> Advanced Nuclear Technologies - GOV.UK ([www.gov.uk](http://www.gov.uk))

## **COST OF NUCLEAR EXPANDED FIGURES**

- The below figures are central cost estimates for projects commissioning in 2025 (in real 2021 prices), and can be retrieved from the following Department for Energy Security and Net Zero (DESNZ) publication: [Electricity generation costs 2023 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/electricity-generation-costs-2023).
  - New nuclear<sup>4</sup>:
    - Central: £109/MWh
    - Range: £84 - 123/MWh
  - CCGT with CCS<sup>5</sup>:
    - Central: £110/MWh
    - Range: £85- 123/MWh
  - CCGT H Class:
    - Central: £114/MWh
    - Range: £99 - 133/MWh
  - Offshore Wind:
    - Central: £44/MWh
    - Range: £40 - 49/MWh
  - Onshore Wind:
    - Central: £38/MWh
    - Range: £33 - 43/MWh
  - Large-scale Solar:
    - Central: £41/MWh
    - Range: £37 - 48/MWh
- Statistics published by the UK Government provide details on the levelised costs for electricity generation technologies. A levelised cost is the average cost of the lifetime of the plant per MWh of electricity generated. They reflect the cost of building, operating, and decommissioning a generic plant for each technology.
- As noted in the publication, for nuclear, DESNZ continues to use the cost assumptions from the 2016 'Electricity Generation Costs'<sup>6</sup> report. To enable comparison with the levelised costs of other technologies, the central cost estimate for new nuclear in the 2016 report has been updated to 2021 values using His Majesty's Treasury (HMT) GDP deflators.
- Globally, the price of nuclear is estimated to be almost \$250 MWh, five times the cost per MWh of onshore wind (under \$50 MWh).<sup>7</sup>

## **UK POSITION BEFORE RECENT ELECTION**

- In March 2023, the UK Government announced that nuclear energy will be classified as "environmentally sustainable" and given the same investment incentives as renewable energy.

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<sup>4</sup> Nuclear costs are revealed through bilateral negotiations which relate to specific projects. Project-specific analysis is used to inform the Government's approach to these negotiations. Because the information and analysis used for this purpose is commercially confidential, it is not available to be used to update our generic cost assumptions.

<sup>5</sup> Costs for first deployment of CCGT with CCS in the UK are expected to be revealed through bilateral negotiations which relate to specific projects, informed by project-specific analysis. The information and analysis used for this purpose is commercially confidential. Therefore, it is not available for generic cost assumptions.

<sup>6</sup> [BEIS Electricity Generation Cost Report.pdf \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/114444/beis-electricity-generation-cost-report.pdf)

<sup>7</sup> [https://substack-post-media.s3.amazonaws.com/public/images/5821779c-2dbc-4377-887a-2af8bfb11ba7\\_888x786.png](https://substack-post-media.s3.amazonaws.com/public/images/5821779c-2dbc-4377-887a-2af8bfb11ba7_888x786.png) (888x786) (substackcdn.com)

- The Scottish Government does not agree with the UK Government's (nor EU's)<sup>8</sup> assertion that nuclear energy is 'environmentally sustainable'.
- While nuclear energy creates radioactive waste which must be safely managed over many decades while protecting people and the environment.
- Consequently, we do not believe nuclear should be classified as environmentally sustainable.
- Since 2015, the UK Government has committed significant sums of money to nuclear energy through various projects and programmes. Future developments of new nuclear will also be able to use a Regulated Asset Base funding model reducing developers' financial risk for future projects by providing funding streams through increasing energy bills before projects have become operational.
- Other renewable/ low carbon technologies with high capital expenditure costs, such as Pumped Hydro Storage, have not benefited from the same scale of direct investment by the UK Government nor been able to utilise similar market mechanisms to facilitate deployment.

#### ***Civil Nuclear Roadmap to 2050***

- On 11 January UK Government outlined plans<sup>9</sup> for the biggest expansion of nuclear power for 70 years to reduce electricity bills, support thousands of jobs and improve UK energy security – including exploring building a major new power station and investing in advanced nuclear fuel production.
  - Approval will be given for one or two new reactors every five years from 2030 to 2044, and backing given to another large-scale reactor in addition to Hinkley Point C and the planned Sizewell C (1GW),
  - Planning rules for SMRs relaxed,
  - Measures aimed at quadrupling UK nuclear power by 2050 up to 24GW,
- The UKG announced that they will seek to establish international nuclear third-party liability treaty relations with partners across Europe and Asia and America, to remove barriers to further investment in the sector.
  - UKG also looking at further innovations in the nuclear sector which could provide direct heat for industry, energy for green hydrogen production, and medical isotopes for the diagnosis and treatment of cancer.
  - **HALEU nuclear fuel programme** – The UKG also announced that the UK will become the first country in Europe to launch a high-assay low-enriched uranium (HALEU) nuclear fuel programme, strengthening supply for new nuclear projects through £300 million investment.
  - The government funding will support domestic production of the specialist fuel required to power the next generation of nuclear reactors. Most advanced modular reactors (AMRs) require this fuel that is currently only commercially produced in Russia.
  - An additional £10 million will also be provided to develop the skills and sites to produce other advanced nuclear fuels in the UK.
  - This builds on the UK's status as a world leader in the production of nuclear fuels, with domestic capability in uranium enrichment and in fuel fabrication in the North-West of England.

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<sup>8</sup> EU taxonomy: Complementary Climate Delegated Act to accelerate decarbonisation - European Commission (europa.eu)

<sup>9</sup> Biggest expansion of nuclear power for 70 years to create jobs, reduce bills and strengthen Britain's energy security - GOV.UK (www.gov.uk)

- The UKG also launched a consultation on Approach to siting new nuclear power stations beyond 2025 (closing 10 March) and on Alternative routes to market for new nuclear projects (closing 4 April).
- Future skills work is also part of this – all parts of nuclear, including decommissioning. Roadmap coming out from taskforce next month which DESNZ have been working with MOD on setting out how many new jobs the nuclear sector needs. Analysis by the Nuclear Skills Strategy Group suggests that to reach up to 24GW, the civil and defence nuclear workforce will need to double over the next 20 years (around 80,000 additional skilled jobs).
- On 6 March 2024, the Government announced that GBN is buying sites at Yns Mon / Wylfa (Anglesey) and Oldbury-on-Severn (Gloucester). Eight sites have previously been designated as nuclear sites in the UK. The acquisition of these two nuclear sites will ensure we can progress with plans to build new nuclear power stations of all sizes, as set out in the Government's nuclear roadmap.

## **HINKLEY POINT C**

In May 2009, Centrica and EDF announced a joint venture to build new nuclear power stations in UK (though Centrica pulled out in 2013, citing increased costs and an extended construction timetable). In November 2012, EDF was awarded a nuclear site licence for Hinkley Point C, with the cost given by EDF as £16 billion. The same month, EDF submitted proposals for the Sizewell site to construct two further reactors. Both Hinkley Point C and Sizewell C will be delivered by EDF.

Hinkley Point C (HPC) in Somerset will be the first of these new nuclear power stations, and the first nuclear power station to be built in the UK for a generation, generating 3.2GW of energy.

### **Top lines**

- In 2016 (when approved), Hinkley Point C was due to be completed in 2025 at a cost of £34 billion in today's prices. EDF now estimates that the project could cost as much as £46.5bn and be delayed till 2031.<sup>10</sup>
- According to the *Financial Times*, as of January, the French government is pushing British ministers to provide loan guarantees for Hinkley Point C to try to ease EDF's financing costs.<sup>11</sup>
- Under a deal agreed in 2013, the CfD strike price applied to Hinkley Point C is £92.50/MWh in 2012 prices and will rise with the consumer price index – locking in high prices for 35 years.
- In a report on nuclear power published by the National Audit Office in 2016, the UK public spending watchdog said the estimated value of the premium due to EDF over the 35-year duration of the contract had increased from £6.1bn when the deal was struck in 2013 to £29.7bn.<sup>12</sup>

### **Timeline**

- May 2009, Centrica and EDF announce joint venture to build new nuclear power stations in UK

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<sup>10</sup> EDF's UK Hinkley Point nuclear plant start date delayed again, costs mount | Reuters

<sup>11</sup> Paris seeks UK loan guarantee after Hinkley Point nuclear plant costs soar

<sup>12</sup> Nuclear power in the UK (nao.org.uk)

- November 2012, EDF was awarded a nuclear site licence for Hinkley Point C, with the cost given by EDF as £16 billion.
- February 2013, Centrica pulls out of joint venture with EDF citing increased project costs in new nuclear and an extended construction timetable.<sup>13</sup>
- March 2013, EDF grants development consent order from Department of Energy and Climate Change
- October 2013, Government and EDF agree on "strike price" of Hinkley Point C.
- September 2015, EDF admits that the project will not complete in 2023, with a further announcement on the final investment decision expected in October 2015.
- September 2015, UKG announces £2 billion loan guarantee for the project.
- October 2015, State-owned China General Nuclear (CGN) agrees in principle to invest £6 billion into the project.
- September 2016, UKG gives the go-ahead for Hinkley Point C following a new deal with EDF.
- March 2017, ONR grants consent for construction of Hinkley Point C to begin.
- July 2017, EDF announces that the total cost of the power station was likely to rise to between £19.6 billion and £20.3 billion, depending upon the overrun.
- September 2019, EDF announces that the total cost of the power station was likely to rise by up to £2.9 billion and the total bill could be more than £22 billion.
- June 2020, EDF announces that the reactor base for unit 2 has been completed at a much faster rate than unit 1.
- December 2023, reports that China General Nuclear Power Corp. had halted funding for the UK's Hinkley Point C nuclear station.<sup>14</sup>
- January 2024, EDF warned the cost of the Hinkley Point C project could reach £46bn<sup>15</sup> and has been delayed for another 4 years (2031).
- January 2024, The French government is pushing British ministers to provide loan guarantees for Hinkley Point C to try to ease EDF's financing costs.<sup>16</sup>

## **SIZEWELL C**

Sizewell C will use the same design as Hinkley Point C. Each pair of EPRs will be capable of generating 3.2GW of low-carbon electricity, enough to supply around 6 million homes.

### **Top lines**

- EDF applied for a nuclear site license for Sizewell C (3.2GW) in 2020. EDF expect the project to take between nine and twelve years to construct and cost £20 billion.
- In 2018, EDF's CEO claimed they expect significant time and cost savings compared to the near-identical sister plant, Hinkley Point C.<sup>17</sup>

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<sup>13</sup> Centrica pulls out of new UK nuclear projects - BBC News

<sup>14</sup> Hinkley Point Nuclear Plant in UK Stops Getting Funding From China's CGN - Bloomberg

<sup>15</sup> Hinkley Point C nuclear power station delayed by up to four more years | UK News | Sky News

<sup>16</sup> Paris seeks UK loan guarantee after Hinkley Point nuclear plant costs soar

<sup>17</sup> EDF Energy expects 20% cost saving for Sizewell C - World Nuclear News (world-nuclear-news.org)

- However, the projected construction cost of £20 billion for Sizewell C is 25% higher than the £16 billion that were projected for Hinkley Point C at a similar stage of the planning process in 2012.<sup>18</sup>
- Total UKG subsidy for Sizewell C is approximately £2.5 billion.
- In January 2024, the UK government announced a further £800 million investment would be made available. It means the government has now committed £2.5bn to pave the way for the proposed Sizewell C nuclear power station, up from £1.7bn previously.<sup>19</sup>

### **Timeline**

- November 2012, EDF submit proposals for the Sizewell site to construct two EPR reactors.
- October 2015, EDF announced that it had 'agreed the Heads of Terms of a wider UK partnership for the joint development of new nuclear power stations at Sizewell and Bradwell with China General Nuclear Power Group (CGN), with EDF taking an 80% share and CGN will taking a 20% share' during the development phase of the project.
- May 2020 EDF Energy announced that it had submitted a development consent order application.
- June 2020, EDF announced it had yet to organise financing, and could not take on more construction risk in the UK. EDF was looking to the UK government to assist with financing either by offering a RAB model used on less risky infrastructure, putting immediate cost burden on end consumers.
- June 2020, EDF Energy applies to the Office for Nuclear Regulation (ONR) for a licence to build and operate Sizewell C.
- January 2022, the UK government invested £100 million towards continued development of the project.
- March 2022, it was announced that the UK government and EDF would each take a 20% stake in the project, with infrastructure investors and pension funds expected to take up the remaining 60%.
- May 2022, EDF admitted that Hinkley Point C would cost an extra £3bn, taking it to up to £26bn.
- July 2022, the planning application was approved and a Development Consent Order was issued by the Secretary of State.
- August 2022, The Guardian reported expected costs were £20 billion to be paid with £1.7 billion of taxpayer money and a surcharge on customer energy bills through the Regulated Asset Base model.
- November 2022, Security concerns about China caused the government to buy CGN out of the development for just over £100 million, leaving it co-owned by EDF and UKG.
- November 2022, UKG announces that it was taking over a 50% stake in the project for £679 million.
- February 2023, EDF confirmed that following anticipated external investment its shareholding in the project will be no more than 19.9%. Project costs estimates vary from £20 billion to £35 billion.

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<sup>18</sup> Sizewell C 'may cost double government estimates and take five years longer to build' | Politics | The Guardian

<sup>19</sup> Further steps to prepare Sizewell C for construction - GOV.UK ([www.gov.uk](http://www.gov.uk))



- September 2023, UKG issued a pre-qualification questionnaire to prospective investors; successful applicants will be invited to participate in the bidding process. UKG make an additional £511 million available for project development and site preparation ahead of the bidding process.
- January 2024, the UK government announced a further £800 million investment would be made available. It means the government has now committed £2.5bn to pave the way for the proposed Sizewell C nuclear power station, up from £1.7bn previously.

## COST OVERRUNS AND DELAYS OF EDF EPR PROJECTS

- The European Pressurized Reactors (EPR) is a third generation pressurised water reactor that will be used in Hinkley Point C and Sizewell C.
- The five EPRs designed by EDF have all suffered unanticipated issues that have led to costly delays and soaring price tags.
- The issues with the EPRs underscore the findings of a 2020 Massachusetts Institute of Technology analysis that found successive iterations of a new nuclear design generally cost more than the original project.

Project	Location	Construction started	Initial end date	Latest end date	Initial budget	Latest estimated budget	Amount over budget
Flamanville 3	Normandy, France	2007	2012	2024	€3.3bn	€13.2bn	€9.9bn
Hinkley Point C	Somerset, England	2017	2025	2029-31	£18bn	£31bn - £35bn*	£13bn
Olkiluoto 3	Olkiluoto Island, Finland	2005	2009	2022	€3bn	€10bn	c. €7bn
Taishan units 1 and 2	China	2009/10	2014/15	2018/19	c. €8bn	c. €12.2bn	c. €4.2bn

## NUCLEAR FUNDING MODELS

- The UK government wants to ensure that developers and investors have options when assessing the most appropriate way to fund a nuclear project. This is why government has created both the Contract for Difference (CfD) and Regulated Asset Base (RAB) funding models as possible approaches to funding future projects. The most appropriate model will vary project by project, dependent on its design maturity, potential replication benefits and siting. Investors and developers will be able to engage with the government of either of these options.
- Under the CfD model, for each MWh of electricity generated, the generator is paid the difference between the strike price and the market reference price for electricity sold into the market for the duration of the contract. In the scenario where the market reference price rises above the strike price, the generator will pay back the difference.

- The nuclear RAB model is a method of funding future nuclear projects, providing support for their design, construction, commissioning, and operation. Sizewell C is the first nuclear power station in the UK set to be funded through a Regulated Asset Base (RAB) model.
- Under the RAB funding model, a company receives a licence from an economic regulator to charge a regulated price to consumers in exchange for providing the infrastructure in question. The intention is for the initial capital expenditure costs (which are very high for nuclear energy) to be shared between investors and consumers. This aims to prevent these high capital expenditure costs from being a barrier to projects getting off the ground and can lower overall costs.
- In the case of RAB funding for nuclear energy, electricity suppliers are deemed as the 'consumer' and must contribute to the costs of the project. Suppliers then in turn pass some of this cost on to consumers meaning that, ultimately, billpayers cover part of the cost of these projects.
- RAB models set out agreed costs, and any outruns above this agreed cost are not passed to consumers. However, the RAB model locks consumers into the cost of a project, with energy customers having to shoulder costs should a project overrun. This can increase energy bills for consumers before projects become operational.
- UK Government launched a consultation on 24 October 2023 to seek views on the proposed modifications to electricity industry codes and licences so that the nuclear RAB revenue stream can function as intended. It published its response on 22 February 2024.

### **ANNEX C RECENT DEVELOPMENTS AND NEWS COVERAGE**

25 July The UK Government have introduced the Great British Energy Bill to Parliament and have announced their intentions for Great British Energy, a publicly-owned company headquartered in Scotland to invest in clean, home-grown energy.

- Great British Energy will be a publicly owned, clean-energy company. It will own, manage and operate clean power projects, such as wind farms, up and down the country
- Great British Energy will accelerate new nuclear and position Britain as a leader in technologies such as floating offshore wind and tidal. It will also partner with the private sector to accelerate the rollout of more mature renewable energy generation technologies such as wind and solar.

03 March, Sunday Post. UKG minister Andrew Bowie claims Scottish nuclear power could contribute up to 5% of the UK's overall electricity demand and slash household energy bills - but is being blocked for "ideological reasons".

### **French-built nuclear reactor delays to put Britain at risk of blackouts, The Telegraph, 27 February 2024**

- The report mentioned, Mind the Gap: Exploring Britain's energy crunch, was commissioned by Drax Power, the owner of the controversial Drax power station that once burned coal but is now fuelled largely by wood chips imported from "sustainable" forests in North America. It generates about 4% of the UK's electricity but is reliant on taxpayer subsidies that last year earned Drax £617m, but which comes to an end in 2027. Drax is lobbying politicians to extend those subsidies.
- The study says that 'the next government will need to take action early to address this shortfall and keep the lights on in 2028. There are limited options available.

The two most viable are to extend the life of existing assets, for example, nuclear or biomass, and simultaneously to manage energy demand.'

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**16 June:** [The Herald] The Nuclear Industry association has characterised SG's position on nuclear power as "hopelessly ideological" and "anti-science".

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## **NUCLEAR POWER**

**The Scottish Government is embracing renewables, hydrogen and carbon capture and storage to drive economic growth, support green jobs and deliver secure, affordable and clean energy for Scotland.**

- New nuclear power is expensive, will take years to become operational and involves significant environmental concerns.
- We recognise the contribution that nuclear generation makes to Scotland's current energy mix, but its contribution is set to decrease as we increase generation from renewable and other low carbon sources, which provide the best pathway to net zero by 2045.
- Our upcoming Energy Strategy and Just Transition Plan will set out how we will support workers to take advantage of the enormous opportunities offered by becoming a net zero economy.
- Based on analysis from Ernst and Young (EY), low carbon and renewable energy could support nearly 80,000 jobs in Scotland by 2050.

## **COST OF NEW NUCLEAR**

**New nuclear is expensive compared to renewable alternatives**

- The Contract for Difference price awarded to Hinkley Point C (£92.50 per MWh) is significantly higher than the strike prices set for solar, and onshore and offshore wind in the March 2024 allocation round, at £61, £64, and £73 per MWh (in 2012 prices) respectively.
- Levelised costs of Electricity estimates from the UK Government show how expensive nuclear power is relative to alternatives (central cost estimates):
  - New nuclear: £109/MWh
  - Offshore Wind: £44/MWh
  - Onshore Wind: £38/MWh
  - Large-scale Solar: £41/MWh

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## **IMPACT OF REDUCING NUCLEAR POWER ON ENERGY SECURITY AND NET ZERO**

### **Continued growth in renewables, storage, hydrogen and carbon capture technologies provides the best pathway to net zero.**

- The National Grid Electricity System Operator conducted a study of the effects of the earlier than expected closure of nuclear generation in Scotland, which concluded that the system would remain secure.
- Modelling underpinning the Climate Change Plan and the draft Energy Strategy and Just Transition Plan shows that the closure of Hunterston B and Torness power stations can be compensated for by the expansion of renewables and storage technologies, instead of increased unabated fossil fuel generation.

## **ENVIRONMENTAL CONCERNS**

### **Nuclear energy creates radioactive waste which must be safely managed over many decades while protecting people and the environment.**

- The Scottish Government does not agree with the UK Government's assertion that nuclear energy is 'environmentally sustainable'.
- Nuclear power stations require nuclear material for their operation and generate radioactive waste, both of which can involve hazardous radiation and require complex and expensive handling for security as well as public health and environmental protection.
- In addition, radioactive waste can remain dangerous for thousands of years and must be managed and stored securely to prevent environmental contamination or harm to the public.

## **JOBS IN NUCLEAR ENERGY**

### **Our upcoming Energy Strategy and Just Transition Plan will set out how we will support workers to take advantage of the enormous opportunities offered by the net zero energy transition.**

- Based on independent analysis from Ernst and Young (EY), low carbon and renewable energy could support nearly 80,000 jobs in Scotland by 2050.
- The nuclear energy workforce has contributed significant value to Scotland's economy and local communities over many decades.
- Decommissioning Scotland's nuclear sites will take decades and will require the retention of a highly skilled workforce. Our National Planning Framework 4 supports the redevelopment of Hunterston and Chapelcross sites and notes opportunities to repurpose existing assets to create greener jobs.

## **NUCLEAR GENERATION IN SCOTLAND – TORNESS**

### **Torness Power Station, and its workforce, have played a valuable role in Scotland's economy and the East Lothian community over many decades.**

- We recognise the contribution that nuclear generation makes to the current energy mix in Scotland; however, its contribution is set to decrease as we increase electricity generation from renewable and other low carbon sources.
- The Scottish Government supports extending the operating lifespan of Torness if strict environment and safety criteria continue to be met.

## **ADVANCED NUCLEAR TECHNOLOGIES**

**Small Modular Reactors (SMRs) and Advanced Modular Reactors (AMRs) involve the same environmental concerns as traditional nuclear fission.**

- While SMRs and AMRs may be innovative in their fuels or construction technique, they use the same method of electricity generation as traditional nuclear fission.
- Lead in times are also long, even if shorter than traditional nuclear power stations.

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**Briefing for Visit to Hunterston B Power Station – INITIAL DRAFT NOT YET APPROVED**

<b>What</b>	A visit to Hunterston B nuclear power station. You will be given a tour of the facility by the Director, followed by a short meeting at the Director's office with GMB union representatives.
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<b>Where</b>	Power Station Rd, Hunterston, West Kilbride KA23 9QX
<b>When</b>	21 August 2024 15:00 - 17:00 (2 hours)
<b>Key message</b>	<ul style="list-style-type: none"> <li>The Hunterston facility and its workforce have contributed significant value to Scotland's economy over several decades, and play an important role in the North Ayrshire community.</li> </ul>
<b>Who</b>	<ul style="list-style-type: none"> <li>Joe Struthers - Station Director, Hunterston B - EDF (UK)</li> <li>[REDACTED: REGULATION 11(2)], GMB Scotland</li> <li>[REDACTED: REGULATION 11(2)] GMB Scotland</li> </ul>
<b>Why</b>	An opportunity to see in practice the work at Hunterston B to defuel the station; discuss the work of the station, its contribution to the local economy, and its upcoming move to the decommissioning phase with EDF staff; and meet with GMB Union representatives.
<b>Supporting official</b>	Tbd  ENFOR – [REDACTED: REGULATION 11(2)]
<b>Briefing contents</b>	<b>Annex A:</b> Event programme <b>Annex B:</b> Attendees and bios <b>Annex C:</b> Top Brief <b>Annex D:</b> [REDACTED: OUT OF SCOPE] <b>Annex E:</b> The Scottish Government's position on Nuclear Energy <b>Annex F:</b> Just Transition for Nuclear Workers
<b>Media handling</b>	[Please confirm if comms official attending and provide contact numbers, both mobile and office]
<b>Social media</b>	[Please provide suggested tweets for the Minister and include any Twitter (X) handle for company or individual]
<b>Dress code</b>	Complete this box for any formal events or where there is a particular recommendation for footwear and so on. Delete this box if not applicable.
<b>Greeting party and specific meeting point on arrival (if event is at a non-Scottish</b>	You will be greeted by .....  [If no official support has been agreed with PO please ensure there is a named contact and telephone number.]

<b>Government building)</b>	
<b>Specific entrance for ministerial car and parking arrangements</b>	Delete this box if not applicable

**ANNEX A**

**Event Programme – INITIAL DRAFT NOT YET APPROVED**

<b>Time</b>	<b>Activity</b>
15:00	Arrive at site (add details of where)
15:15	Welcome and introductions – Station Director’s Office.
16:00	Station Tour.
16:00	Discussion with Station Director (tea/coffee)
16:30	Meeting with GMB representatives
17:00	Leave site

**ANNEX B**

**Attendees and Bios**

**ANNEX C**

**Top Brief**

(This should cover key issues, and any issues to avoid and ideally two pages max)

**Background – Hunterston Nuclear Power Station (EDF Energy)**

- The Hunterston B nuclear power station is undergoing defueling at the moment with the completion of defueling of Reactor 3 in September of last year and with the aim to declare the site fuel free in 2025.
- Nuclear material/fuel is a reserved issue and so all nuclear fuel will be transported to Sellafield in Cumbria for storage.
- Once defueling is complete and the necessary authorisations are in place the site will transfer to the Nuclear Decommissioning Authority (NDA), who also operate the adjacent Hunterston A site, for decommissioning.

- The decommissioning phase will likely take many years of work, for comparison Hunterston A ceased energy generation in 1990 and is still in the process of decommissioning.
- Decommissioning will generate a range of radioactive waste that must be managed safely and securely.
- [to add relevant background on just transition issues such as the Ayrshire Growth Deal – Just Transition team]
- When Hunterston enters the decommissioning stage, it will support 244 full-time employees, this is a reduction of less than a third from the current headcount.
- The site will provide options open to staff like retirement or voluntary redundancy with enhanced terms like which means there may not be any compulsory redundancies.
- Their view that the recent energy crisis shows we need a diverse mix of low carbon sources, including nuclear, to ensure energy security.
- That EDF respects the Scottish Government's position on nuclear, but it is important to recognise the role nuclear (and its workforce) has played in decarbonising electricity generation in Scotland.
- Background:
  - Over its generating life Hunterston B has produced 297.4 TWh of electricity, enough to power every home in Scotland for 31 years, and avoiding (compared to equivalent gas generation) the release of 101.4m tonnes of CO2.

### **Background – GMB Scotland Meeting**

- GMB Scotland's workplace representatives will also be attending the visit, having requested to meet you.
- In a letter to DFM (11 June) GMB asked the Scottish Government to lift the ban on nuclear power and to allow Hunterston and Torness to be expanded, citing the need to secure low carbon energy jobs. [COMMENT REDACTED: REGULATION 10(4)(e)]
- The letter stated that if the ban is not lifted, a “‘just transition’ will continue to be synonymous with redundancies, and opportunities will be missed alongside emission targets”.
- In a previous letter to Mairi McAllan (22 March) [COMMENT REDACTED: REGULATION 10(4)(e)], GMB said that new nuclear energy must play a key role in pursuit of net zero, citing benefits including “energy stability when the sun isn't shining and the wind isn't blowing”, and concerns that jobs in renewable energy manufacturing are going overseas compared to nuclear energy jobs being based in Scotland.

### **Topics likely to be raised by EDF – Top Lines:**

#### **Hunterson B nuclear power station:**

- The Scottish Government recognises the significant value that Hunterston B and its workforce has contributed to Scotland's economy and in the North Ayrshire community over many decades.
- Background
  - The station employs approximately 520 full time EDF employees plus over 250 full time contract partners



- Hunterston B ceased energy generation in 2022 after 46 years of service.
- [REDACTED: OUT OF SCOPE]
- [REDACTED: OUT OF SCOPE]

### **The role of nuclear in Scotland's current and future energy mix**

- We recognise the contribution that nuclear generation makes to the current energy mix in Scotland; however, its contribution is set to decrease as we increase electricity generation from renewable and other low carbon sources.
- We do not support the building of any new nuclear power stations in Scotland under current technologies.
- Our draft Energy Strategy and Just Transition Plan (ESJTP) sets out our position that significant growth in renewables, storage, hydrogen and carbon capture provide the best pathway to net zero by 2045. These technologies will help deliver a climate friendly energy system and provide affordable, resilient and clean energy for Scotland's households, business and communities.
- The finalised ESJTP, to be published later this summer, will set out policies in areas such as skills, investment and supply chains, to help ensure that this is a just transition that provides high quality jobs and economic opportunities.
- Background:
  - In 2022, 7.9 TWh of electricity was generated from nuclear power in Scotland – 15.8% of total electricity generated. 71% of electricity generated in Scotland in 2022 was from renewable sources.
  - In 2022, 35.7 TWh of electricity was generated from renewable sources in Scotland in 2023, and Scotland's net exports of electricity was 18.7 TWh.
  - At the start of 2024, there was 15.4 GW of renewable electricity capacity in Scotland – a 15% increase from 13.4 GW in Q1 2022.
  - At the start of 2024, there is an estimated capacity of 47.1 GW of renewable electricity projects in the planning pipeline. [COMMENT REDACTED: REGULATION 10(4)(e)]

### **Topics likely to be raised by GMB – Top Lines:**

[REDACTED: OUT OF SCOPE]

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### **Nuclear's role in energy security and emissions reduction**

- Scotland already contributes to GB wide energy security through the rapid growth in clean home-grown renewables as well as an array of storage deployment, with approximately 300 MW of short duration energy storage through lithium batteries and 740 MW of pumped hydro storage.
- National Grid ESO conducted a study of the effects of the earlier than expected closure of nuclear generation in Scotland, which concluded that the system would remain secure (Northern England and Scotland Operability Study, 2021).

- Modelling undertaken as part of the analysis underpinning our Climate Change Plan and draft ESJTP does not show any significant negative impacts from the closure of Torness power station on Scotland's CO2 emissions.
- Under this modelling, the reduction in electricity generation from nuclear power plants in Scotland has been and will be compensated for by the vast expansion of renewables and flexible technologies such as storage, not by fossil fuel plants.

### **The cost of nuclear power compared to alternatives**

- The Contract for Difference price awarded for Hinkley Point C (£92.50 per MWh) is significantly higher than the strike prices set for solar, and onshore and offshore wind, in the March 2024 allocation round, at £61, £64, and £73 per MWh (in 2012 prices) respectively.
- Levelised costs of Electricity estimates from the UK Government show how expensive nuclear power is relative to alternatives (central cost estimates):
  - New nuclear: £109/MWh
  - Offshore Wind: £44/MWh
  - Onshore Wind: £38/MWh
  - Large-scale Solar: £41/MWh

### **Impact of reducing nuclear power on energy security and Net Zero**

- Continued growth in renewables, storage, hydrogen and carbon capture technologies provides the best pathway to net zero.
- The National Grid Electricity System Operator conducted a study of the effects of earlier than expected closure of nuclear generation in Scotland, which concluded that the system would remain secure.
- Modelling underpinning the Climate Change Plan and the draft Energy Strategy and Just Transition Plan shows that the closure of Hunterston B and Torness power stations can be compensated for by the expansion of renewables and storage technologies instead of increased unabated fossil fuel generation.

### **The importance of Hunterston jobs and their long-term security**

- Our Energy Strategy and Just Transition Plan, due to be published later this summer, will set out how we will support Scotland's workforce to upskill and reskill in order to take advantage of the opportunities of the transition to net zero.
- Based on independent analysis from Ernst and Young (EY), low carbon and renewable energy could support nearly 80,000 jobs in Scotland by 2050.
- The nuclear energy workforce has contributed significant value to Scotland's economy and local communities over many decades.
- Background:
  - According to the Nuclear Industry Association's annual Jobs Map, 3,676 people were working in the sector across Scotland in 2023, up slightly compared to 2022, but down 8% compared to its 2018 level.
  - 1,070 people work at the Torness and Hunterston B power station sites, with a further 430 full time contractors. Hunterston B moved into the decommissioning phase in 2022 after 46 years of service.
  - Scotland has globally renowned expertise in decommissioning, with over 400 people working at Dounreay on the Thurso coast

**If Torness is mentioned:**

**EDF's plans to extend the operational lifetime of Torness Power Station**

- The Scottish Government recognises the significant value that Hunterston B and its workforce has contributed to Scotland's economy and East Lothian over many decades.
- We support extending the operating lifespan of Torness if strict environment and safety criteria continue to be met.
- Prolonging the life of this station could help to ensure Scotland retains a secure energy supply while we increase the proportion of energy generated by renewables and cleaner thermal generation technologies.
- Background
  - Torness is included in EDF Energy's plans to extend the lives of its operational nuclear power stations in the UK. These plans would total around £1.3 billion in investment.
  - The plans are subject to approvals by safety regulators as well as rigorous safety inspections.
  - Dr Mark Hartley, managing director of EDF's nuclear operations business, said the firm wanted its advanced gas-cooled reactors (AGRs) at the plants to "maintain output... for as long as possible".

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**ANNEX D**

## **The Scottish Government's position on Nuclear Energy**

[to add further detail on SG's position and evidence here, in response to specific points raised by GMB on this]

### **UKG's position**

- The UK government has claimed that nuclear power is a “critical part” of the UK's energy mix and pledged to get stalled projects over the line.
- In Labours' manifest the party has claimed that they will ensure the long-term security of the sector, extending the lifetime of existing plants, and we will get Hinkley Point C over the line.
- New nuclear power stations, such as Sizewell C, and Small Modular Reactors, will play an important role in helping the UK achieve energy security and clean power while securing thousands of good, skilled jobs.
- The Scottish Government does not agree with the UK Government's (nor EU's)<sup>20</sup> assertion that nuclear energy is 'environmentally sustainable'.
- While nuclear energy creates radioactive waste which must be safely managed over many decades while protecting people and the environment.
- Consequently, we do not believe nuclear should be classified as environmentally sustainable.

### **Energy Strategy and Just Transition Plan**

- Our Energy Strategy and Just Transition Plan (ESJTP), to be published later this summer, will set out our vision for a future net zero energy system that delivers affordable, secure and clean energy and provides high quality jobs and economic opportunities.
- The ESJTP will also set out policies to support a managed transition from fossil fuels in line with the Scottish Government's climate change goals, alongside interventions and policies in areas such as skills, investment and supply chains, to help ensure that this is a just transition.
- We are engaging extensively with stakeholders to support the development of the ESJTP, including with the Just Transition Commission, the Scottish Energy Advisory Board, business organisations, public bodies and other stakeholders.
- In line with feedback received in our consultation on the draft strategy, the finalised ESJTP will look across the whole energy system, including the relationship between renewable energy generation and anticipated demand in Scotland, as well as network infrastructure and economic benefits.

## **Just Transition for Nuclear Workers**

- As Scotland reduces our reliance on fossil fuels and nuclear power, we are determined to ensure a just transition for affected workers and communities.
- Our forthcoming Energy Strategy and Just Transition Plan will reaffirm our commitment to ensuring that workers have the support they need to seize new

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<sup>20</sup> EU taxonomy: Complementary Climate Delegated Act to accelerate decarbonisation - European Commission (europa.eu)

opportunities – from nuclear decommissioning, the export of existing skills, or the transfer of skills to other sectors, such as renewables.

- The energy transition presents enormous economic opportunities for Scotland. The clean energy sector GVA is projected to reach up to £6 billion in 2030 and £11 billion in 2050.
- Scotland’s renewable energy sectors and supply chain supported more than 42,000 full time equivalent jobs and over £4.7 billion of GVA in 2021. With the right support there could be around 25,000 more jobs in the renewable energy production sector (including wind, CCUS and hydrogen) by 2030 than there were in 2019. [COMMENT REDACTED: REGULATION 10(4)(e)]

[to add background and lines here on SG’s actions on a just transition, jobs in renewables, and any specific issues related to Hunterston’s decommissioning and new workforce structure]

<b>What</b>	Meeting with Michael Shanks MP, UK Minister for Energy
<b>When</b>	Tuesday, 6 August 2024 13:30 – 14:30
<b>Where</b>	St Andrew’s House, Room (4W.01)
<b>Who</b>	<b>Michael Shanks MP</b> , Parliamentary Undersecretary of State at the Department for Energy Security and Net Zero
<b>Why</b>	You are having an introductory meeting with Mr Shanks to discuss a broad range of shared energy priorities, as set out below. You have engaged with Mr Shanks previously regarding Grangemouth.
<b>Key messages</b>	<ul style="list-style-type: none"> <li>• In our initial engagements with the UK Government, we have made clear our expectations that Great British Energy must deliver real benefits for the people of Scotland and support our ongoing efforts for a just transition and to reach net zero by 2045.</li> <li>• Welcome the UK Government’s commitment to support Petroineos’ study project – Project Willow – and look forward to working with Mr Shanks on the just transition of Grangemouth through the Grangemouth Future Industry Board (GFIB).</li> <li>• We want to work with you to progress legislative changes that will modernise Scotland’s consenting regime under the UK Electricity Act 1989 with benefits for both onshore and offshore consenting.</li> <li>• I welcome the positive engagement with my officials to develop voluntary guidance on community benefits for new transmission infrastructure to-date. It is vital that this work is taken forward as a priority, and I would welcome an update on next steps.</li> </ul>

	<ul style="list-style-type: none"> <li>• I welcome the engagement to date on the Strategic Spatial Energy Plan, and we look forward to contributing as full partners as this work commences.</li> <li>• I would welcome closer working with the UKG- on green skills, to ensure we are working together to drive a just transition for Scotland’s highly skilled offshore workers.</li> <li>• The UK Government’s mission to accelerate development of grid infrastructure under its Mission 2030 is welcome and we now need to ensure connections to the grid. Without bringing dates forward, we risk undermining investor confidence and eroding deployment.</li> <li>• We welcome the UK Government’s decision to fund long term solutions for mitigating interference in military radar from offshore wind.</li> <li>• We look forward to engaging further with UKG prior to publication of the ESJTP and also as we then move into the delivery phase.</li> </ul>
<b>Official support</b>	[REDACTED: REGULATION 11(2)], Ragne Low, [REDACTED: REGULATION 11(2)], [REDACTED: REGULATION 11(2)]
<b>Agenda</b>	<p><b>DESNZ have confirmed that Mr Shanks will be looking to discuss the following topics</b></p> <ol style="list-style-type: none"> <li>1. GB Energy</li> <li>2. [REDACTED: OUT OF SCOPE]</li> <li>3. [REDACTED: OUT OF SCOPE]</li> <li>4. [REDACTED: OUT OF SCOPE]</li> <li>5. [REDACTED: OUT OF SCOPE]</li> <li>6. [REDACTED: OUT OF SCOPE]</li> <li>7. [REDACTED: OUT OF SCOPE]</li> </ol>
<b>Main objective</b>	Welcome Michael Shank’s engagement. Close working between the UK Government and Scottish Government is important in the NZE space.
<b>Briefing contents</b>	<p><b>ANNEX A:</b> Agenda</p> <p><b>ANNEX B:</b> GB Energy</p> <p><b>ANNEX C:</b> [REDACTED: OUT OF SCOPE]</p> <p><b>ANNEX D:</b> [REDACTED: OUT OF SCOPE]</p> <p><b>ANNEX E:</b> [REDACTED: OUT OF SCOPE]</p> <p><b>ANNEX F:</b> [REDACTED: OUT OF SCOPE]</p> <p><b>ANNEX G:</b> [REDACTED: OUT OF SCOPE]</p> <p><b>ANNEX H:</b> [REDACTED: OUT OF SCOPE]</p>

**ANNEX A**

## AGENDA

Tuesday, 6th August  
13:30 – 14:30

Item	Subject
1	Introductions
2	GB Energy
3	[REDACTED: OUT OF SCOPE]
4	[REDACTED: OUT OF SCOPE]
5	[REDACTED: OUT OF SCOPE]
6	[REDACTED: OUT OF SCOPE]
7	[REDACTED: OUT OF SCOPE]
8	[REDACTED: OUT OF SCOPE]
9	<i>[REDACTED: OUT OF SCOPE]</i>



ANNEX B	GB Energy
Issue/ background	<ul style="list-style-type: none"> <li>• [REDACTED: OUT OF SCOPE]</li> <li>• [REDACTED: OUT OF SCOPE]</li> <li>• [REDACTED: OUT OF SCOPE] <ul style="list-style-type: none"> <li>○ [REDACTED: OUT OF SCOPE]</li> <li>○ [REDACTED: OUT OF SCOPE]</li> <li>○ [REDACTED: OUT OF SCOPE]</li> <li>○ [REDACTED: OUT OF SCOPE]</li> <li>○ <b>Great British Nuclear</b> – Exploring how Great British Energy and Great British Nuclear will work together.</li> </ul> </li> <li>• [REDACTED: OUT OF SCOPE]</li> <li>• [REDACTED: OUT OF SCOPE] <ul style="list-style-type: none"> <li>○ [REDACTED: OUT OF SCOPE]</li> <li>○ [REDACTED: OUT OF SCOPE]</li> <li>○ [REDACTED: OUT OF SCOPE]</li> <li>○ [REDACTED: OUT OF SCOPE]</li> </ul> </li> <li>• <b><u>[REDACTED: OUT OF SCOPE]</u></b></li> </ul>

<p><b>Key message(s)</b></p>	<p><b>Top Lines</b></p> <ul style="list-style-type: none"> <li>• [REDACTED: OUT OF SCOPE]</li> <li>• [REDACTED: OUT OF SCOPE]</li> <li>• [REDACTED: OUT OF SCOPE]</li> </ul> <p><b>[REDACTED: OUT OF SCOPE]</b></p> <ul style="list-style-type: none"> <li>• [REDACTED: OUT OF SCOPE]</li> <li>• [REDACTED: OUT OF SCOPE]</li> </ul> <p><b>[REDACTED: OUT OF SCOPE]</b></p> <ul style="list-style-type: none"> <li>• [REDACTED: OUT OF SCOPE]</li> <li>• [REDACTED: OUT OF SCOPE]</li> </ul> <p><b>[REDACTED: OUT OF SCOPE]</b></p> <ul style="list-style-type: none"> <li>• [REDACTED: OUT OF SCOPE]</li> <li>•</li> </ul> <p><b>GB Nuclear</b></p> <ul style="list-style-type: none"> <li>• Whilst there is a great deal of agreement between the two Governments on many of the priorities that have been identified, one area where we diverge is on new nuclear power stations. We are clear that the UK Government's intended investment in nuclear should instead be used to bolster further renewables.</li> </ul> <p><b>[REDACTED: OUT OF SCOPE]</b></p> <ul style="list-style-type: none"> <li>• [REDACTED: OUT OF SCOPE]</li> </ul>
<p><b>Contact point</b></p>	<p>[REDACTED: REGULATION 11(2)]</p>

<b>ANNEX C</b>	<b>[REDACTED: OUT OF SCOPE]</b>
<b>Issue/ background</b>	[REDACTED: OUT OF SCOPE]
<b>Key message(s)</b>	<ul style="list-style-type: none"> <li>• [REDACTED: OUT OF SCOPE]</li> </ul>
<b>Contact point</b>	[REDACTED: OUT OF SCOPE]

<b>ANNEX D</b>	<b>[REDACTED: OUT OF SCOPE]</b>
<b>Issue/ background</b>	[REDACTED: OUT OF SCOPE]
<b>Key message(s)</b>	<i>[REDACTED: OUT OF SCOPE]</i>
<b>Contact point</b>	[REDACTED: OUT OF SCOPE]

<b>ANNEX E</b>	<b>[REDACTED: OUT OF SCOPE]</b>
<b>Issue/ background</b>	<ul style="list-style-type: none"> <li>• [REDACTED: OUT OF SCOPE]</li> </ul>
<b>Key message(s)</b>	<ul style="list-style-type: none"> <li>• [REDACTED: OUT OF SCOPE]</li> </ul>
<b>Contact point</b>	[REDACTED: OUT OF SCOPE]

<b>ANNEX F</b>	<b>[REDACTED: OUT OF SCOPE]</b>
<b>Issue/ background</b>	[REDACTED: OUT OF SCOPE]
<b>Key message(s)</b>	<ul style="list-style-type: none"> <li>• [REDACTED: OUT OF SCOPE]</li> </ul>
<b>Contact point</b>	[REDACTED: OUT OF SCOPE]

<b>ANNEX G</b>	<b>[REDACTED: OUT OF SCOPE]</b>
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<b>Issue/ background</b>	[REDACTED: OUT OF SCOPE]
<b>Key message(s)</b>	• [REDACTED: OUT OF SCOPE]
<b>Contact point</b>	[REDACTED: OUT OF SCOPE]

<b>ANNEX H</b>	[REDACTED: OUT OF SCOPE]
<b>Issue/ background</b>	• [REDACTED: OUT OF SCOPE]
<b>Key message(s)</b>	• [REDACTED: OUT OF SCOPE]
<b>Contact point</b>	[REDACTED: OUT OF SCOPE]