IET response to the Energy Security and Net Zero Committee - Planning for nuclear energy generation consultation

About the IET

The IET is a trusted adviser of independent, impartial, evidence-based engineering and technology expertise. We are a registered charity and one of the world's leading professional societies for the engineering and technology community with over 155,000 members worldwide in 148 countries. Our strength is in working collaboratively with government, industry and academia to engineer solutions for our greatest societal challenges. We believe that professional guidance, especially in highly technological areas, is critical to good policy making. For further details on the evidence submitted, please contact policy@theiet.org.

1. **Does EN-7 provide a clear and effective framework for planning new nuclear infrastructure, including both large-scale and modular technologies?**

EN-7 is a clear and effective planning framework that can facilitate the development of both large-scale nuclear plants and modular technologies such as Small Modular Reactors (SMRs) and Advanced Modular Reactors (AMRs). This is a positive step toward unlocking innovation and investment in the sector.

This is supported by EN-7s move away from a fixed-site model to a more flexible, criteria-based approach, which allows for nuclear development in a broader range of locations while maintaining safety and environmental standards.

2. **Is the proposed criteria-based approach to siting appropriate, and does it adequately balance flexibility, safety, and impact on communities and the environment?**

We welcome a shift from a fixed-site model to a criteria-based siting framework, which allows for a broader range of potential nuclear development locations. This approach is appropriate for enabling both large-scale nuclear plants and nuclear technologies, particularly SMRs and AMRs, which may require different siting considerations.

However, flexibility must be matched by rigorous safeguards and robust criteria to ensure public safety, environmental protection, and community engagement. Infrastructure, ecosystems and public perception of EN-7 must be carefully assessed and considered if this is to be beneficial and widely appreciated. This can be enhanced by ensuring a transparent decision-making process is in place which holds developers and regulators to accountable.

3. **The draft EN-7 retains a Semi-Urban Population Density Criterion (SUPDC) for siting. Is this criterion, as drafted, appropriate for all potential nuclear technologies, including SMRs?**

Whilst we agree with government plans to retain the SUPDC in EN-7 there are examples whereby reassessment could be necessary based on the locations of high energy consumers. Certain technological developments, like data centres, require massive amounts of energy for their operations and if these are built in urban locations, they will need massive amounts of energy provisions from a local provider.

SMRs / AMRs are the only current technology that can facilitate this sustainably and at the required scale, therefore, they will need to be co-located with these high energy consumers. If SMRs / AMRs can prove they are intrinsically safe and do not pose any offsite risks, it will be important to review the semi-urban population criteria to ensure that high energy technical developments such as Data centres are not being restricted. If this is the case the SUPDC will need to be updated to ensure new technologies are able to develop in semi-urban areas.

The SUPDC should be re-evaluated to reflect the lower risk profiles and different operational characteristics of these newer technologies. For example: SMRs and AMRs are designed with enhanced safety features, including passive cooling systems and reduced radioactive inventories. These technologies could be sited closer to demand centres, potentially in semi-urban or industrial zones, which the current SUPDC may restrict.

As well as this, there should be a periodic review of the available evidence to support a change to the risk profile of SMRs. Whilst it is understandable for the first SMRs built in the UK to be in a non-urban environment, it can then inform the future risk profile of these technologies. It would be more valuable to maintain the NPP and Semi-urban population density criteria as an overarching policy development regime, but input subsections that reduces the criteria for technology that can demonstrate they are inherently safe. This would ease planning applications and help aid the speed of development.

Government should capitalise on evidence-based adjustments to the criterion, to ensure it remains protective of public safety while enabling innovation and deployment. For example, the government should consider flexible, risk-informed siting criteria that differentiate between large-scale reactors and modular technologies and commit to ongoing review mechanisms to adapt the SUPDC as technology and safety data evolve.

4. Is EN-7 adequately future-proofed to accommodate advancements in nuclear technologies?

EN-7, alongside the draft National Policy Statement, is adequately future proofed to accommodate advancements in nuclear technologies. Site assessment criteria would also be future proofed, although each technology and design choice may vary depending on its characteristics and will most likely be suitable to meet the criteria stated in these documents. Allowing suitable flexibility with regards to multiple reactors and leaving it to the developer to decide whether to develop in a single or multiple phase approach would support the advancement of nuclear technologies. This is especially the case for SMRs which may be deployed at many sites simultaneously, and AMRs where the first-of-a-kind may be quickly augmented by future revisions of the design in a multi-phase approach on a single site.

5. How does EN-7 compare to international approaches? Are there lessons to be learned from other countries' planning systems?

EN-7 represents a significant shift in planning policy by moving from a fixed-site approach to a criteria-based framework. This change is designed to support a wider range of nuclear technologies to enable more flexible siting of nuclear infrastructure

When comparing EN-7 to other international approaches, and how the UK can learn from them:

<u>United States of America (USA)</u>

- The USA Nuclear Regulatory Commission (NRC) uses a licensing framework that includes Early Site Permits and Combined Licenses, allowing for modular and phased development.

- The USA has also been proactive in creating pathways for SMRs, including streamlined environmental reviews and financial incentives.

Lesson for the UK:

- A more integrated licensing and permitting system could reduce delays and improve investor confidence.

Canada

- Canada's Impact Assessment Act requires extensive community and Indigenous consultation, especially for nuclear projects.
- The Canadian Nuclear Safety Commission (CNSC) has developed specific guidance for SMRs, emphasising safety and public engagement.

Lesson for the UK:

- Strengthening community involvement and transparency could enhance public trust and reduce opposition.

France

- France's centralised energy planning model allows for rapid deployment of nuclear infrastructure, but it has faced criticism for limited public input.
- The French government has recently committed to a new wave of nuclear builds, including SMRs, with strong state backing.

Lesson for the UK:

- Balancing central planning with democratic oversight is key to long-term success.

Finland

- Finland's success with the Olkiluoto 3 reactor is often attributed to clear regulatory pathways and strong political consensus.
- The Finnish Radiation and Nuclear Safety Authority (STUK) is known for its rigorous but predictable approval process.

Lesson for the UK:

- Predictability and clarity in regulation are essential for attracting investment and delivering projects on time.

6. Are there any other issues, concerns, or opportunities the Committee should consider in relation to EN-7?

As EN-7 is described as intended to become the principal guide for decisions on future nuclear power stations in England and Wales, we assume that a very important criterion would be the associated economics and yet this is not mentioned in the Inquiry. It is difficult to see how the UK reduce energy costs, which is critical to supporting its growth agenda, if economics is not a factor bring considered in the guide for future nuclear energy generation.

We suggest that cost / economics criterion should encompass:

- Nuclear versus non-nuclear technologies, e.g. nuclear versus hydrogen Combined Cycle Gas Turbine (CCGT)

- One form of nuclear technology versus others, e.g. European Pressurised Reactor (EPR), SMR, AMR as well as prospective advancements in site specific criteria and resilience including fuel source.