

Written evidence submitted by Rolls-Royce SMR (IND0024)

Rolls-Royce SMR is pleased to contribute to the Energy Security & Net Zero Committee's inquiry 'Industrial strategy for clean power'. As per the request from the Committee, we are largely keeping our submission as-is from last year's inquiry into 'Securing the domestic supply chain', however have provided amendments to the previous submission below where it was now out of date. This primarily relates to evidence provided around the Great British Nuclear (GBN) competition, Rolls-Royce shareholders, and success in international markets.

How can UK plc capture its fair share of the economic potential of emerging or less developed energy technologies?

The UK is pioneering a number of emerging energy technologies which have the potential to make the country a world-leader in clean energy production.

However, if UK plc is to truly benefit from these innovations, in addition to technological development, it is critical that we have in place a diverse and robust supply chain that has the capacity and capability to build and deliver these game-changing new infrastructure projects.

The UK Government has said it wants to create a renaissance in nuclear power, something that is being replicated across the world – with leaders, including the UK, at COP28 recently signing a declaration to triple nuclear capacity by 2050.

In Rolls-Royce SMR, the UK has its first domestic nuclear technology in more than 20 years. Each of our 470MW SMRs will produce enough stable, affordable and emission-free electricity to power a million homes for 60 years. If the UK decides to commit to fleet deployment of Rolls-Royce SMR technology, the UK is more likely to secure the vitally important UK-based supply chain contracts that will support our long-term deployment. However, both Rolls-Royce SMR and those supply chain companies need to see a sufficient and sustainable investment signal.

This business began as a Government initiative to position the UK as a global leader in SMR technology at low-cost, and more quickly and efficiently than traditional large-scale nuclear plants. It was led by a UK consortium of nine companies and later evolved into the business Rolls-Royce SMR. In 2021, we received £210 million of Government funding via UKRI, which was more than matched by private investment, for the development phase of our programme.

Rolls-Royce SMR is unashamedly 'Team GB', and our deployment strategy is to optimise and maximise UK content where it is possible to do so. This will require investment and sufficient contractual certainty to build the capability and more importantly, the capacity to ensure success.

Our factory-based approach to SMR fleet deployment involves around 90% of the plant being factory fabricated and delivered as modules to prepared sites. We believe that this is not only a more efficient way of constructing nuclear power plants but will create sustainable manufacturing jobs across numerous regions in the UK.

From initial analysis conducted with the Nuclear Advanced Manufacturing Research Centre (NAMRC), we also believe that a UK fleet of Rolls-Royce SMRs could be delivered with up to 78% UK content, which we will detail in an answer to a later question.

However, to enable us to utilise the UK supply chain as much as possible we need clarity from the Government on a programme for Rolls-Royce SMR deployment in the UK so that the supply chain can scale its capacity and capability to cope with the opportunity.

We are currently one of four companies in the Great British Nuclear (GBN) SMR down selection process. The Government is aiming to announce winners of the competition by Spring this year, a year later than initially planned.

It is critical that there is no further delay to this timeline, in order to provide us as a vendor clarity on a commitment to deploy in the UK, and to give the UK supply chain confidence in an SMR programme so that it can prepare and invest.

The earlier that the Government down-selects SMR technologies, the earlier the wider supply chain (much of which includes SMEs) can scale up. This will be essential if looking to maximise the UK taxpayer benefit from SMRs, where approximately 80 percent more of the content could be provided by UK businesses if there is enough time for companies to plan and scale. A commitment by Government to secure UK SMR orders with Rolls-Royce SMR will provide the opportunity for us to develop a UK-focused supply chain, who will then be able to demonstrate their capability on a global scale and help unlock long-term orders to other global SMR customers.

The SMR global market is hugely competitive - the International Energy Agency (IEA) recently speculated that cumulative financing for SMRs could reach £547bn by 2050. In Rolls-Royce SMR, the UK has a national champion which around 18 months ahead of competitors in the regulatory processes in the UK and has first-mover advantage in Europe.

As a result, we are receiving significant interest from governments, state-owned utilities, and tech hyper-scalers both within the UK and abroad. Rolls-Royce SMR has been selected by the Czechia Government to deploy up to 3 GW of clean, affordable energy in Czechia, are currently down-selected in the UK's Great British Nuclear competition and are similarly down-selected in the ongoing equivalent competition in Sweden. This, coupled with other export markets showing significant interest, illustrates the potential for Rolls-Royce SMR to become Europe's leading SMR vendor, and one of the UK's premier green technology export opportunities.

Therefore, pace in Government decision-making is essential if UK plc is to truly benefit from the once-in-a-lifetime opportunity of SMR deployment and secure the UK's position in the market as a global leader.

Does the UK have the supply chain capacity to deliver the required energy infrastructure by 2035, including an expanded electricity network?

What more can the Government do to encourage greater domestic supply chain investment in the energy industry by 2035, including through the Contracts for Difference scheme?

We will answer the above two questions together.

One Rolls-Royce SMR power station will have over 40 million parts, and we plan to procure over a billion pounds worth of components from the supply chain per nth of a kind (NOAK) plant, so the opportunities for the UK supply chain to contribute are significant.

As our Pressurised Water Reactor (PWR) is based on a technology used in the majority of nuclear reactors worldwide, including the UK (Sizewell B), countries across Europe, the US and Canada, much of the supply chain required already exists both at home and abroad to support Rolls-Royce SMR deployment in the 2030s and beyond.

From initial analysis of UK supply chain capability with partners such as the NAMRC, we believe that a fleet of Rolls-Royce SMRs could have up to 78% UK content. This number is split into two

categories: UK capability that already exists, and UK capability that could exist with investment, but further work is required to ensure the UK supply chain can deliver at the pace and scale that will be required.

The remaining 22% has been identified as not available in the UK – examples include steam generators, reactor pressure vessels and reactor coolant pumps – which are not commercially available without significant investment today or there is insufficient time to secure this content for the first wave of reactors. Rolls-Royce SMR has already assessed approximately 1600 companies both at home and abroad.

We have engaged with multiple UK nuclear organisations, such as the NAMRC, Nuclear Industry Association (NIA), and Britain's Energy Coast Business Cluster (BECBC) to map and fully understand capabilities of the existing UK nuclear supply chain. Many of the components required to assemble a Rolls-Royce SMR are standardised and could be sourced from non-nuclear, high-quality supply chains such as those 'near-industries' like oil and gas, offshore wind, aerospace, and defence. This will help to mitigate supply chain capacity risks, increase UK spend and cement the UK position as the foundation supply chain for all future SMRs.

We have also developed a multi-industry supplier capability database that currently has more than 5,000 entries, and this is now integrated with our recently launched Supplier Portal 'Registration of Interest Form'. This database acts as a reference tool by our procurement team when developing supply chain strategies.

Using a mix of established, high-quality nuclear and non-nuclear supply chains will reduce delivery risk of a Rolls-Royce SMR and allows more companies to sustainably invest in long-term capacity and capability. The industries noted often have similar standards to the civil nuclear industry, so we can be confident that items will be manufactured to a high quality in existing supply chains. We are also currently working with National Skills Academy Nuclear, Nuclear Skills Strategy Group, and NAMRC to develop gap analysis assessments and training courses that will support non-nuclear suppliers transitioning to nuclear.

The UK supply chain is poised, capable and prepared to scale its capacity and capability for the delivery of new nuclear plants by 2035, including Rolls-Royce SMR, and to continue the legacy from recent and proposed large-scale nuclear projects such as Hinkley Point C in Somerset and Sizewell C in Suffolk. The identification of gaps in the supply chain – the work we have already undertaken has been detailed in this response – and early intervention is key.

A First of a Kind (FOAK) Rolls-Royce SMR will be online in the mid-2030s and with work already underway, we believe that the supply chain can be scaled effectively in time for this delivery date, but this requires close coordination with Government and industry on where to scale-up and when.

For example, in the next couple of years, long-lead items, such as long lead-time forgings, reactor pressure vessel, reactor internals, and Integrated Head Packages (IHP), can be ordered, but we cannot make this decision without a contractual commitment from Government. The proportion of the UK supply chain and its ability to be involved in the deployment of SMRs will ultimately be determined by the size of the demand signal in the UK.

There are already a number of approaches and initiatives available that Rolls-Royce SMR will utilise to improve the capability of the UK supply chain. They are:

- Conducting community consultations to assess local benefits and to increase social value in the area in which our plants and factories sit, which will include using the local supply chain and training local people to work on the project;
- Engaging with local Chamber of Commerce to understand local supplier capability and share access to tenders;
- Collaborating with other large infrastructure projects and regional groups in the UK to help share learning;
- Using NAMRC initiatives such as Fit4Nuclear and Sharing in Growth that help SMEs enter the nuclear supply chain;
- Using Catapult Centre Network capability growth programmes and advanced techniques to open up new supplier sources;
- Attracting inward investment from private enterprise to win work;
- Using UKEF to secure access to finance for export provision for UK suppliers.

Our strategy is to maximise UK content – coupled with existing industry mechanisms to support supply chain growth – which means the UK is in a strong position to support a global fleet of Rolls-Royce SMRs if it has near-term clarity that there will be a programme of SMR deployment in the UK from the Government.

Confidence in a commitment to build and pace in decision-making are the principal factors required to immediately secure the required investment in the domestic supply chain capability and capacity.

As recommended above, the Government must keep to its updated timeline for the GBN down selection to announce winners in Spring 2025 and award contracts by the end of the 2025 at the latest. This will unlock the supply chain and trigger a cascade of activity from vendors, including Rolls-Royce SMR, and developers will shortly follow, as we will be able to make decisions on chosen suppliers, flow down orders and start work with communities around the established new build site.

To mitigate supply chain constraints and maximise UK content, we also believe a commitment to any more than two designs in the GBN process in the immediate term will begin to dilute the benefits of building a fleet of reactors and standardisation of that fleet. As well as delayed decision making, committing to too many technologies in a short period of time will lead to too much competition in the supply chain and ultimately vendors could have to look outside of the UK to fulfil their requirements to build in time to operate by the mid-2030s.

A programmatic approach to when and where Government will build large-scale projects and SMRs is required so that supply chain capacity and skills can be grown and supported sustainably for future generations.

ABOUT ROLLS-ROYCE SMR LTD

Rolls-Royce SMR Ltd was established in November 2021 to deliver clean affordable energy for all.

The business is capitalised by Rolls-Royce Group, BNF Resources UK Limited, Constellation Group Ltd, the Qatar Investment Authority and through UK Research and Innovation (UKRI) grant funding. Subject to customary regulatory clearances and security assessments, CEZ will make an investment into Rolls-Royce SMR, acquiring a stake of approximately 20 percent.

A Rolls-Royce SMR power station will have the capacity to generate 470MW of low carbon energy, equivalent to more than 150 onshore wind turbines. It will provide consistent baseload generation

Comment [CS]: My understanding is this is completely off the table now, is that officially official?

for at least 60 years, helping to support the roll out of renewable generation and overcome intermittency issues.

Rolls-Royce SMR will draw upon standard nuclear energy technology that has been used in 400 reactors around the world. Rolls-Royce has been a nuclear reactor plant designer since the start of the UK nuclear submarine programme in the 1950s.

Rolls-Royce SMR uses established nuclear technology and know-how to offer a low cost, deliverable, global and scalable and investable solution, that can be rolled out around the world.

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