



Demand-led new nuclear: A Government-last model through privately- funded advanced nuclear technologies

About this report

Acknowledgements

This independent report was developed in-house by Baringa with input from individuals and companies across the SMR ecosystem.

The authors would like to acknowledge the valuable contributions of Baringa colleagues, design services of Brand Temple, as well as the insights and expertise of a wide range of stakeholders in shaping and refining the vision. The report was tested with these stakeholders through the first half of 2026, and the authors are particularly grateful for the review input and perspectives provided by hyperscalers, SMR technology vendors, developers, engineering consultancies, and independent experts. Their feedback has strengthened the analysis and ensured it reflects a broad cross-section of industry and policy viewpoints.

Contributors



Alex Spencer
Director



Alex Weir
Director



Sarah Owen-Vandersluis
Partner



Chris Kavanagh
Manager



Devon Platt
Manager



Will Gompertz
Consultant

Contents

Foreword	4
1. Executive summary	6
2. Introduction and context	12
2.1 The foundations have been laid for private sector deployment of nuclear SMRs	13
2.2 Advanced Nuclear Framework: Foundations for private sector-led deployment	15
2.3 A vision for a demand-led SMR growth model to supercharge delivery	16
3. The AI and nuclear opportunity	18
3.1 Society is on the cusp of a new industrial revolution	19
3.2 A global race to secure power capacity	20
3.3 AI hyperscalers want nuclear power and will pay for it	21
3.4 SMRs offer the fastest, but not only, route to market for the AI and nuclear opportunity	24
4. Barriers to UK SMR deployment	25
4.1 De-linked energy supply and demand planning	26
4.2 The structural tenor mismatch between contracting horizons and nuclear asset lifetimes	28
4.3 A complex, disjointed value chain with too many designs	30
4.4 The development risk	32
4.5 First-of-a-kind project delivery risk	34
4.6 High-impact, low-probability investor risks	35
5. Vision for demand-led SMR deployments	36
5.1 The nuclear sector should create attractive and credible propositions	40
5.2 Hyperscalers should offer bankable PPAs and early, credible project engagement	44
5.3 Government should provide protection against unfinanceable and long-term risks	46
5.4 All parties should collectively manage FOAK uncertainties	52
6. Implementing the vision	56
6.1 Building the model: Coordination and co-development	58
6.2 Clarifying Government support early	59
6.3 Implementing an initial development agreement	60
6.4 Government can take a 'hands-off' approach after upfront enabling activity	63
6.5 Solutions with precedent	64
7. A year for action	65
References	68

Demand-led new nuclear:
A Government-last model through privately-funded advanced nuclear technologies

Foreword

1. Executive summary

2. Introduction and context

3. The AI and nuclear opportunity

4. Barriers to UK SMR deployment

5. Vision for demand-led SMR deployments

6. Implementing the vision

7. A year for action

References

Foreword

As interest from Governments and investors in new nuclear development increases there is much great work ongoing on how to replicate existing designs in different sites, new designs of existing technologies, on new advanced technologies, on fusion.

What all the design ideas have in common is that to become reality they need to be financed: we have seen GW construction make progress in the UK with a CfD for Hinkley Point C, we have seen Sizewell C achieve investment grade rating and financial investor equity based on the RAB model and the concept of fleet build, a bespoke arrangement in development for the first UK SMRs at Wylfa, and we can see other countries publish different support frameworks available to developers.

The UK is exploring frameworks to bring forward more nuclear development, and to bring fusion beyond the STEP programme into the UK. This independent Baringa Report makes a thoughtful and important contribution to the questions the country needs to answer about the level of support which will bring forward the developments which can provide power for an electrifying economy, with energy security and all the GVA nuclear developments can bring, but which will not over burden consumers and tax payers. Stimulating and enabling private investment in nuclear, as set out in this report, could bring significant benefits in terms of culture, governance and effective decision making – areas where the sector must improve if it is to deliver with pace and confidence. The report’s articulation of a more demand-led, ‘Government last’ model is also compelling, and will depend on the industry demonstrating more reliable delivery, along with anchor offtakers, such as hyperscalers, committing earlier and playing a more active role in shaping and driving projects.

The social contract in relation to PPAs and related developments which benefit the private sector will need strong consideration where there is socialised support from consumers or taxpayers to enable this. Of course, the construction of nuclear power also needs to show improvement which justifies the level of consumer and taxpayer support offered, and it is hoped that the implementation of the Fingleton Review can support the industry’s own efforts to bring costs under control.

However, the perfect can be the enemy of the good, and we cannot spend too long weighing options. After a period of consideration, and alongside the work to reduce the costs of nuclear construction, a clear choice needs to be made about the support mechanisms so that developers see the UK as a top destination of choice in an international and growing market, that supply chains invest, young people come into the industry and we can maintain the momentum achieved by the Government decisions to green light Hinkley C, Sizewell C and the Wylfa SMRs, restarting an industry pioneered in the UK.



Julia Pyke,

Executive Chair of Agilia and former MD responsible for financing of Sizewell C Ltd.

Agilia are working across the nuclear sector on new build developments in the UK including SZC and GBE-N bringing their experience of funding and financing, project set up and execution.

Demand-led new nuclear:

A Government-last model through privately-funded advanced nuclear technologies

Foreword

1. Executive summary

2. Introduction and context

3. The AI and nuclear opportunity

4. Barriers to UK SMR deployment

5. Vision for demand-led SMR deployments

6. Implementing the vision

7. A year for action

References





1. Executive summary

The dawning AI-driven industrial revolution, together with renewed focus on energy security, is creating huge demand for **reliable, resilient, and low-carbon electricity**. At the same time, **private capital is looking for long-term, predictable investment opportunities** in energy infrastructure.

New nuclear – through Small Modular Reactors (SMRs) and other advanced nuclear technologies¹ – are ideally placed to meet these needs. Co-located SMRs are well-suited to data centre and industrial loads, offering scalable investment propositions at lower upfront costs than gigawatt-scale nuclear. Yet outside the US, private capital has largely remained on the sidelines and first SMR projects have been primarily state-backed.

The UK's **Advanced Nuclear Framework is an important first step to stimulate private sector-led projects**. It provides a structured approach to help investors identify credible projects and acknowledges Government's role in addressing risks the private sector cannot currently finance. The priority now is to **translate the Framework into a fully operational, demand-led deployment model** that can bring forward projects supported by private capital.

This creates the opportunity to establish a **'Government-last' model** where the private sector leads development, construction, and financing, and Government plays a targeted and enabling role, acting only where needed to unlock projects instead of leading deployment directly.

By anchoring SMR deployments to real demand, this model can accelerate delivery, align capacity with need, and minimise fiscal exposure. Indeed, **hyperscalers offer a highly credible pathway to drive initial projects**, with the commercial incentives and balance sheets to stimulate investment. By enabling this "Government-last" private-sector led model to sit alongside publicly financed programmes led by GBE-N, the UK can accelerate its nuclear ambitions whilst supporting both consumer and industrial needs.

¹ Please see Section 3.4 for more detailed discussion of different nuclear technologies.

This report sets out a practical and replicable approach to deliver a Government-last model, built around four pillars

- 1. Attractive and credible business models and delivery plans** brought forward by robust delivery partnerships comprised of technology vendors, developers, and EPC contractors.
- 2. Hyperscaler PPAs that anchor the demand case**, enabled by early engagements between SMR projects and hyperscalers, and staged offtake commitments to help unlock development finance.
- 3. Protection from unfinanceable risks and provision of a revenue backstop** through a standardised Government Support Package (GSP) that partially underwrites sunk development costs if the GSP is removed for political reasons before financial close.
- 4. Bounding first-of-a-kind (FOAK) cost uncertainty through risk pooling across key stakeholders**, enabling early projects to proceed while supporting scale up and cost reduction.

This approach creates a win-win for Government, industry, and consumers

Government exposure is limited to remote, contingent risks, resulting in minimal expected fiscal impact and limited (if any) impact on consumer bills.

This approach can **accelerate growth in the UK**, providing the firm, low-carbon power needed to support AI deployment, **reducing industrial electricity prices by up to 30%**, and strengthening domestic nuclear capability and export potential.

To seize this opportunity, Government, the nuclear sector, and hyperscalers need to co-develop and commit to the four pillars within the next 12 months.










Our message in pictures

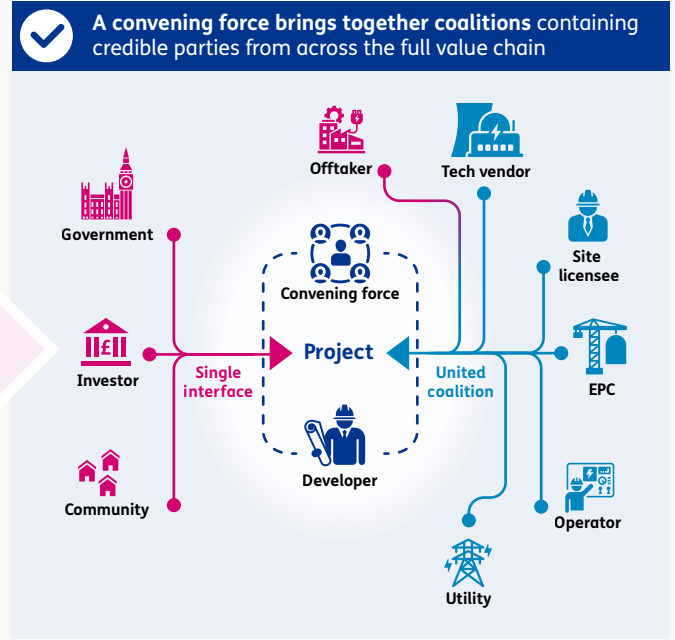
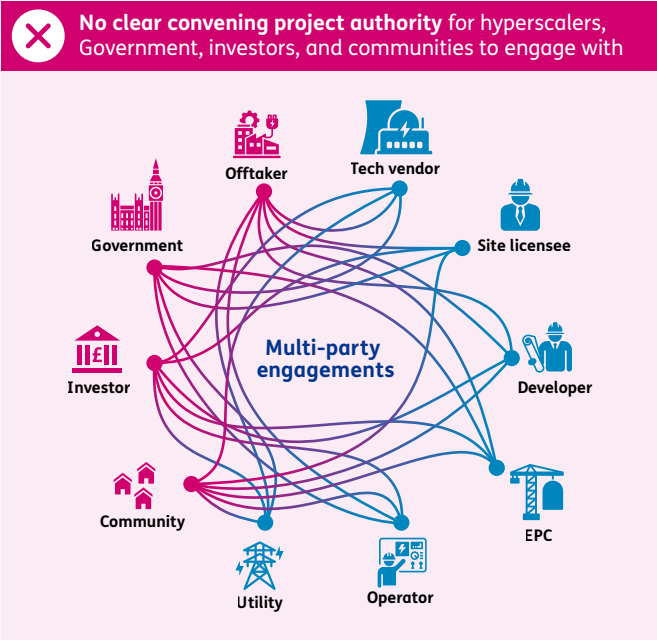
The UK has a 12 month window to establish demand-led projects or risks missing out on economic growth supercharged by AI and nuclear power



What each party needs to offer and the benefits they will access

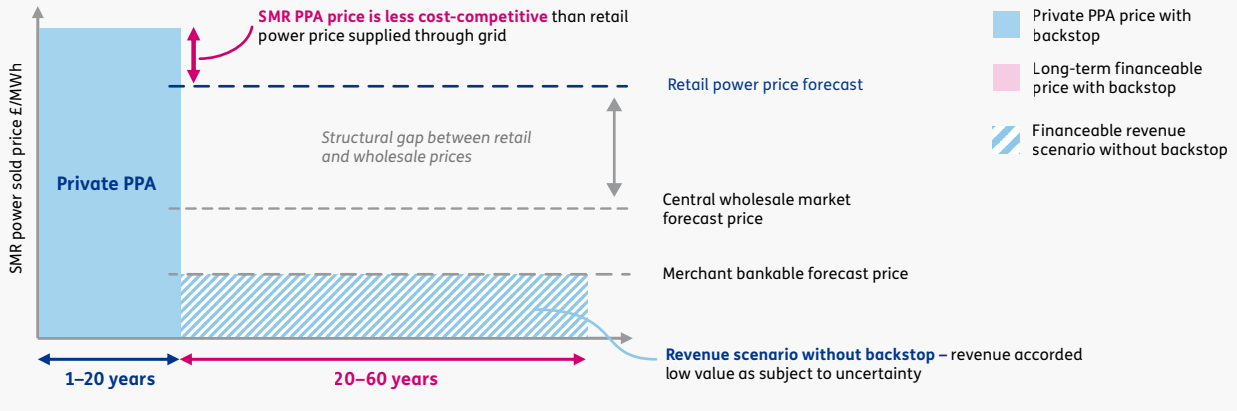
	Key offering	Associated benefit of model
 Nuclear Sector	<ul style="list-style-type: none"> Bring forward credible and attractive propositions Convene, at pace, credible delivery consortiums Innovate with experience, new designs with proven roots 	<ul style="list-style-type: none"> Bankable revenue stream secured Funding for development and construction attracted Fleet deployments enabled (replicable approach)
 Hyperscalers	<ul style="list-style-type: none"> Early project engagement, with potential investment: <ul style="list-style-type: none"> Development funding support (option) Site acquisition (option) 	<ul style="list-style-type: none"> Capacity secured for the short term and the long term Low-carbon power from a dedicated and reliable source <ul style="list-style-type: none"> Preferential PPA terms (if option(s) exercised)
 Utilities/networks	<ul style="list-style-type: none"> Ensure data centre grid connection availability Provide power to data centre during SMR construction and potentially handle data centre PPAs (inc SMR PPA) 	<ul style="list-style-type: none"> New demand and new supply enabling low-carbon growth Funded offtake or asset equity to participate financially
 Government	<ul style="list-style-type: none"> Standardised support package offering: <ul style="list-style-type: none"> Backstop revenue support mechanism Construction completion and HILP risk protection 	<ul style="list-style-type: none"> Private sector-led projects enabled – at pace and scale Direct funding avoided, but support unlocking growth Zero cost to consumers in most likely scenarios
 All	 <p>Vision for a new private market Collaboration to realise the vision Risk pooling to make it work</p>	 <p>Ability to share in risk and reward of project Lowering risk for financial investors Reducing funding costs to transform economics</p>

Illustrating the role of a convening force to bring together coalitions / delivery partnerships

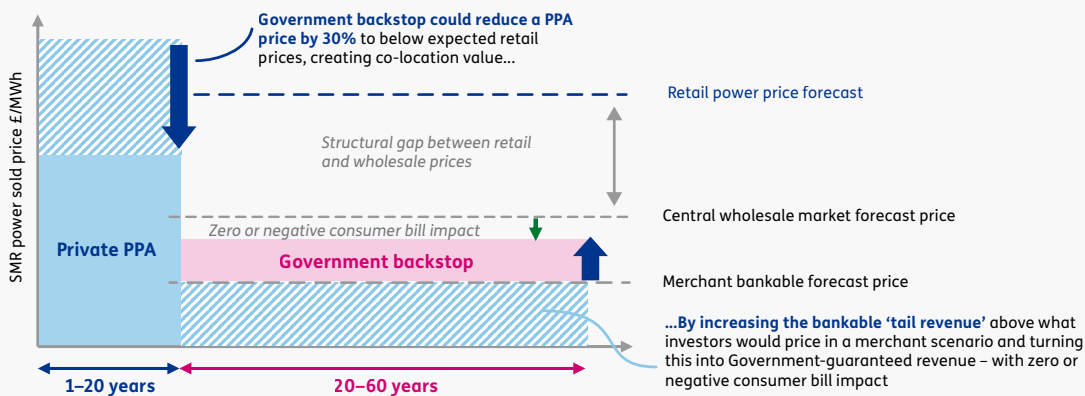


Impact of a Government backstop, that incurs minimal Government liabilities, on PPA costs

Revenue scenario: No Government backstop = uncompetitive PPA prices

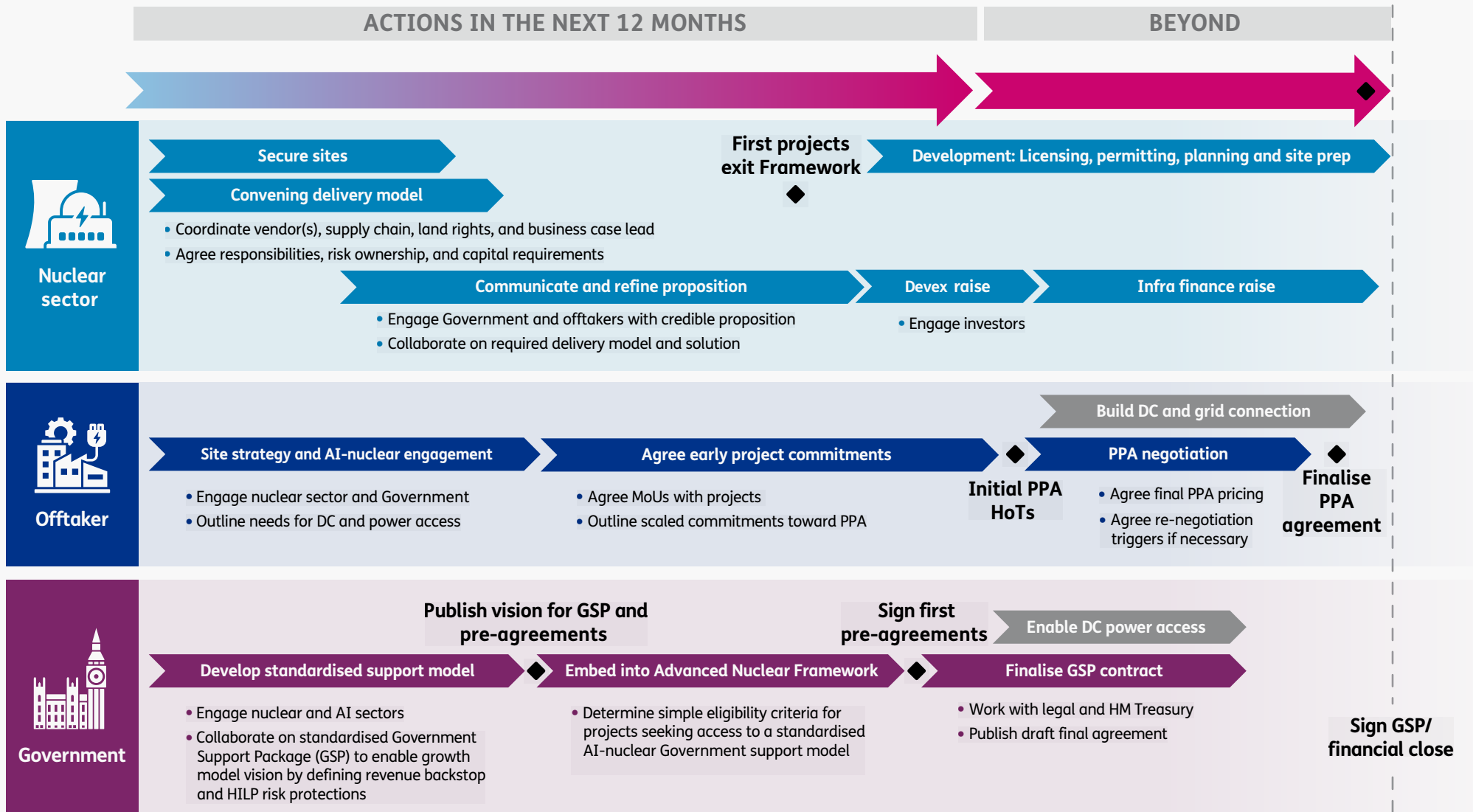


Revenue scenario: With Government backstop = low PPA prices



Actions in the next 12 months and beyond

c. 2029



Demand-led new nuclear:
A Government-last model through privately-funded advanced nuclear technologies

Foreword

1. Executive summary

2. Introduction and context

3. The AI and nuclear opportunity

4. Barriers to UK SMR deployment

5. Vision for demand-led SMR deployments

6. Implementing the vision

7. A year for action

References

2. Introduction and context

Key takeaways

- **There has been dramatic progress in UK nuclear policy since 2023**, creating genuine momentum for private sector led SMR deployment.
- **But developers, investors, and offtakers require greater clarity on commercial structures and risk allocation** to commit at pace.
- **The Advanced Nuclear Framework is a positive indication of the UK Government's willingness to address key barriers**, and provides a platform to build a clear, financeable investment model and route to market for private sector-led SMR deployments.
- **Linking policy progress to a credible delivery model is the critical next step** if the UK is to capitalise on its early mover position.

2.1 The foundations have been laid for private sector deployment of nuclear SMRs

Global momentum behind advanced nuclear technologies has sharply accelerated in the last three years

Advanced nuclear technologies have reached a materially higher level of maturity in the last three years, with several Small Modular Reactor (SMR) designs approaching commercial readiness. At the same time, geopolitical uncertainty has led to a renewed focus on energy security and increased the strategic value of firm, domestically controlled power.

As a result, the advanced nuclear sector – including SMRs and Advanced Modular Reactors (AMRs) – is attracting serious investor interest. **More than \$15 billion of public and private capital has been committed to development programmes across North America and Europe**, with investment increasingly shifting beyond Government development funding and into private capital markets. Growing institutional participation reflects the view that advanced nuclear technologies now sit at the forefront of the next generation of energy infrastructure.

Government investment and policy support has laid the foundations for deployments in the UK

Over the past two to three years, the **UK has made material progress in strengthening the enabling environment for advanced nuclear**. This includes targeted public funding, the establishment of Great British Energy – Nuclear (GBE-N), support for nuclear skills and doctoral focal award programmes, reform to unlock new sites for SMR deployment, and a clear programme for further reform set out in the Nuclear Regulatory (Fingleton) Review. Taken together, these measures provide greater clarity, pace, and confidence for project development than existed previously.

These efforts have helped drive significant progress across technology maturity, siting, skills, and regulation – and have created **a credible opportunity for the UK to become a leader and exporter of advanced nuclear technologies**. The direction of travel is well-aligned to Government priorities on energy security, economic growth, and decarbonisation, but pace and continued dialogue with industry is critical for maintaining momentum.

A snapshot of recent Government interventions: A clear commitment to advanced nuclear deployments

Government interventions to accelerate advanced nuclear reactor deployment readiness

- The **£385m Advanced Nuclear Fund** concluding in 2025 supported technology development and regulatory assessments of SMRs and AMRs, helping to establish a competitive vendor market in the UK ahead of the GBE-N programme and Advanced Nuclear Framework.
- The **GBE-N programme** launched in 2025 allocated £2.5 billion to support the deployment of at least three Rolls-Royce SMR units to the Wylfa site, with final investment decision (FID) to be taken in 2029. GBE-N is also establishing a developer company to deliver advanced nuclear programmes.
- The **Advanced Nuclear Framework** launched in 2026 seeks to accelerate SMR delivery in parallel with GBE-N by supporting private sector-led projects to attract investment.

Government legislative and policy developments to address planning and regulatory barriers

- The **Planning and Infrastructure Act 2025 and Nuclear Regulatory (Fingleton) Review** have identified clear steps for regulatory streamlining and planning regulation to accelerate the deployment of infrastructure. The Prime Minister accepted the Review's recommendations in full.
- **National Policy Statement (EN-7) 2025** identified a criteria-based approach for unlocking new sites for SMRs, with sites identified based on their attractiveness and fit to the criteria as opposed to being restricted to a prescribed list.

Supportive policy documents demonstrating SMRs' clear alignment to Government priorities

- **The Energy Security Plan 2023** highlighted the need to reduce reliance on imported fossil fuels, with SMRs identified as a low-carbon, baseload technology alternative.
- **The AI Opportunities Action Plan 2025** highlighted the role for SMRs in providing an energy backbone to underpin the UK's ambition to become a global leader in AI infrastructure.
- **The Modern Industrial Strategy 2025** highlighted the opportunity nuclear and SMRs present in unlocking jobs, skills, and regional growth. It also recognised the importance of a private-led approach to SMRs and the potential need for future revenue support.

2.2 Advanced Nuclear Framework: Foundations for private sector-led deployment

Government has identified an opportunity for private sector-led deployment of advanced nuclear projects – including SMRs

The advanced nuclear industry has consistently expressed confidence that it can deliver projects with private finance – subject to appropriate risk allocation and policy support – owing to the technologies' lower upfront capital costs compared to traditional gigawatt (GW)-scale nuclear, route to scalable fleet build-out, and use of advanced modular construction methods to improve schedule certainty.

By contrast, traditional GW-scale nuclear projects have relied on significant state underwriting or delivery by state-owned entities due to the scale, complexity, and capital required.

Government has recognised the potential opportunity of advanced nuclear technologies through the policies outlined above, identifying the need for a dual-track approach to SMR deployments in the UK to deliver at pace and scale. The dual tracks represent **two distinct SMR markets in the UK:**

- **Public procurement** involves Government-led procurement of SMRs through GBE-N.
- **Private procurement** is a private route to market (this report's focus) of the sort envisaged in the Government's Advanced Nuclear Framework in February 2026:
“To support and accelerate credible, privately led advanced nuclear projects backed by private capital, while maintaining consumer value for money and high standards of safety, security, and environmental protection.”

The Framework rightly identifies that investor confidence is key to enabling private financing for advanced nuclear technologies, something not yet achieved in the UK to date. Evidence from Baringa's engagement with over 100 potential investors – exploring the underlying reasons behind the lack of private investment in SMRs – indicates that without targeted Government support and risk sharing, projects are being classified as 'high-risk'. Due to their low confidence, the premiums investors would expect on returns push up financing costs and are currently non-competitive for SMR project developers and technology vendors.

The Framework's aim to de-mystify advanced nuclear technologies is therefore positive, and it rightly identifies the key barriers to market that must be addressed to provide investor confidence:

- **“Lack of an established, structured process** by which Government can engage with specific project proposals.”
- **“Concern over [high-impact, low-probability (HILP)] risks that are difficult to insure.”**
- **“The absence of clear pathways to achieving reliable returns.”**
- **“High development costs** incurred before financial close on nuclear projects.”

The Framework highlights the important enabling role Government can take to support investors in identifying credible projects – and how Government can de-risk broader system challenges through concerted policy efforts across skills, regulation, planning, and supply chains.

The Advanced Nuclear Framework begins to address barriers to private sector participation

The Framework introduces:

- **The UK Advanced Nuclear Pipeline and Project Readiness Assessment (PRA)** process which, in principle, endorse credible and well-developed plans for advanced nuclear. Successful projects will have the opportunity to engage directly with Government on potential support measures, subject to due diligence and value-for-money assessments.
- **Potential revenue support such as contracts for difference (CfDs)**, which signal possible pathways to achieving sufficient returns, subject to Government negotiation.
- **HILP risk coverage** to mitigate investors' concerns over risks that are difficult to insure.
- **Potential National Wealth Fund** support to help address high development costs.

The Framework lays the important foundations for private-led deployment – the next step is to move projects from assessments to bankable propositions

The Framework represents a meaningful step forward in articulating Government intent and establishing a structured process for engagement with advanced nuclear projects. It:

- Establishes a well-rounded approach to assessing project eligibility through the PRA.
- Improves clarity on the sequencing and potential forms of Government involvement – addressing nuclear projects' critical need for HILP risk protections.
- Strengthens the foundations for private-led deployment.

The next step will be to define the mechanisms through which projects progress to FID. Indeed, the Framework is intentionally not designed to prescribe specific business models, routes to market, or delivery structures – meaning that important questions remain for industry and investors about how projects transition from eligibility and assessment into bankable, investable propositions **with defined delivery models, partnerships, risk allocation, and offtake agreements.**

For projects largely underpinned by private sector offtake and finance that can move at pace, resolving these outstanding questions quickly will be key to ensuring the Framework acts as an accelerator rather than a brake on private-led deployments.

2.3 A vision for a demand-led SMR growth model to supercharge delivery

By setting out a vision for accelerating private led, demand anchored advanced nuclear deployment with AI data centres and other large industrial users as the initial demand drivers, **this report aims to define the package of actions that project coalitions and Government should take to enable credible privately financed SMR deployment projects to emerge.**

Section 3 describes **why the linkage between AI growth and advanced nuclear represents a credible mid term opportunity in the 2030s** for the UK – and how demand led deployment can create mutual benefits for hyperscalers, the nuclear sector, Government, and consumers.

Section 4 summarises the **key barriers to demand-led, private sector deployment models** in the UK, and how these have stymied investor confidence to date.

Section 5 sets out a practical **vision and the core characteristics of a demand led, private sector deployment model**, using data centre power demand as a first application and identifying the conditions required to deliver investor confidence while maintaining value for money for taxpayers.

Section 6 explains how this model can be **implemented in alignment with the Advanced Nuclear Framework**, with clear and complementary roles for Government, the nuclear sector and offtakers. It also considers how early projects can be supported in a way that enables scale up and cost reduction over time.

Section 7 outlines **key actions and next steps** that need to be taken in the next 12 months to capitalise on momentum in the sector and opportunities posed by the AI-driven revolution.

Taken together, the report shows how an AI and nuclear growth model can maximise the role of private capital, minimise cost to Government and consumers, and accelerate delivery of advanced nuclear capacity in the UK. The report therefore sits alongside the Advanced Nuclear Framework and Fingleton Review, and seeks to address the gaps needed to accelerate advanced nuclear projects.



Demand-led new nuclear:

A Government-last model through privately-funded advanced nuclear technologies

Foreword

1. Executive summary

2. Introduction and context

3. The AI and nuclear opportunity

4. Barriers to UK SMR deployment

5. Vision for demand-led SMR deployments

6. Implementing the vision

7. A year for action

References

3. The AI and nuclear opportunity

Key takeaways

- **AI, data centres, and electrification are driving a step-change in electricity demand**, with grid access and price becoming binding constraints on growth.
- **Hyperscalers are increasingly prioritising firm, low carbon power access** and are willing to contract directly for nuclear capacity.
- **SMRs align closely with this demand profile**, offering scalable, high density, low-carbon baseload power that can be deployed near demand.
- **AI demand provides a credible first market for private led SMR deployments in the UK**. Their early and imminent demand can usher in new financial models – with future applicability across a range of grid and energy-intensive industry deployments.

3.1 Society is on the cusp of a new industrial revolution

The UK is entering an AI- and electrification-driven economic transformation

The UK is standing at the edge of a global and generational economic shift. AI is emerging as the defining competitive frontier of the coming decades – reshaping global value chains, accelerating productivity, and transforming every sector from life sciences to finance. Projections suggest that **AI and cloud computing could add around 0.5-1.5 percentage points to annual UK GDP growth**, depending on the pace of adoption. This amounts to up to a £550 billion cumulative GDP uplift by 2035 and represents one of the largest sources of future growth in the UK economy.²

The UK is well-positioned to be a global leader of this second industrial revolution – hosting world-renowned AI research institutions, globally influential financial and professional-services sectors, and **one of Europe’s largest concentrations of hyperscaler cloud and data centre capacity**. However, if the UK is to capitalise on this opportunity, pace is required to deliver solutions that **address high industrial electricity prices** alongside constraints on land availability and grid access.

In parallel, the UK’s transition to a low-carbon economy and push for energy security depends on rapid decarbonisation, primarily through the electrification of industry, heating, and transport. As AI deployment, industrial digitalisation, electric vehicle adoption, and domestic heat pump rollout all accelerate, **access to reliable, clean, and affordable electricity becomes a foundational driver of national productivity, competitiveness, and economic growth**.

² Public First, *Unlocking the UK’s AI Potential*, commissioned by Microsoft UK, 2024.

Electricity demand is expected to double – the fastest growth in modern UK history

The UK's ability to reverse economic stagnation, capture the upside of the new industrial era, and reindustrialise a nation in the face of an increasingly uncertain world is inextricably linked to an ability to supply abundant, reliable, and low-carbon power.

Figure 1 illustrates the scale of the shift now underway. After more than two decades of declining electricity consumption, the UK is entering a period of unprecedented growth, with **annual electricity demand expected to more than double by 2050**, exceeding the previous historic high by 1.5x. Data centre demand – although uncertain – is expected to increase 5x-20x by 2050, equivalent to c.8-10% of the UK's total electricity demand in 2050.³

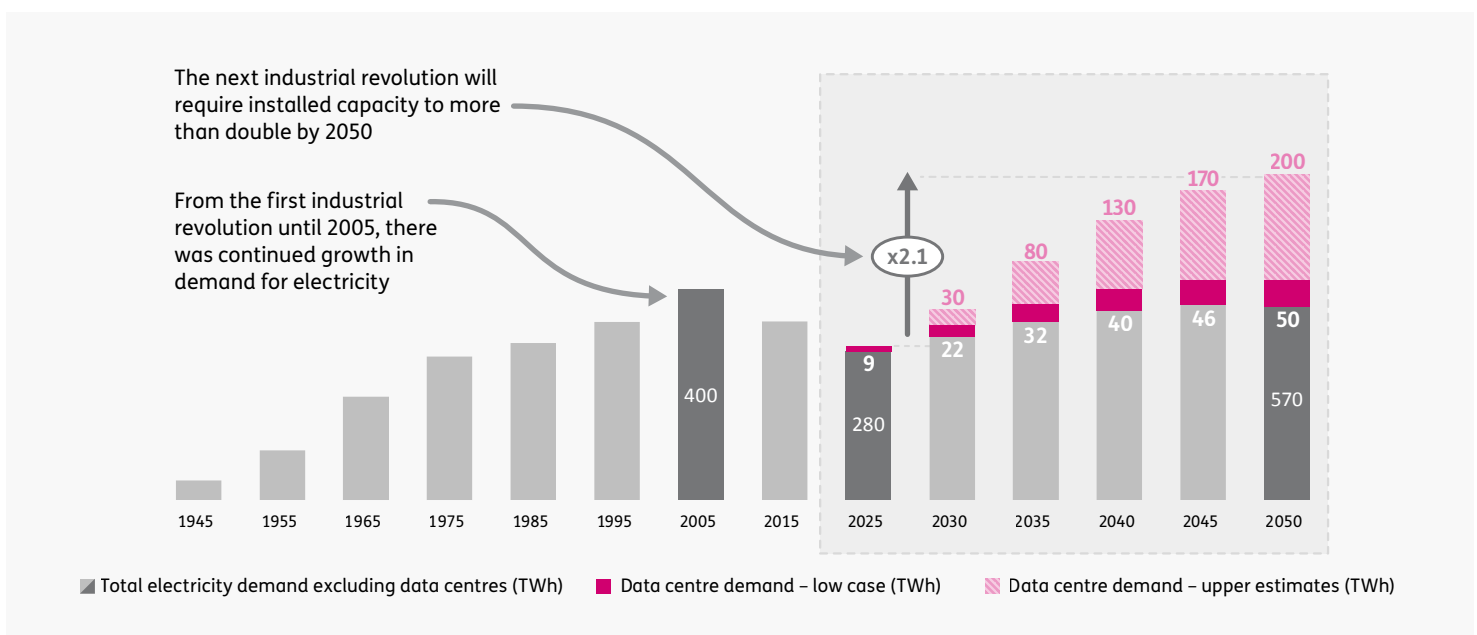


Figure 1: UK electricity demand, historic and projection through to 2050

3.2 A global race to secure power capacity

Hyperscalers wish to secure TW of capacity in the UK and/or Europe by 2030, with line of sight to long-term capacity from the mid-2030s

There is a global race for capacity, with hyperscalers competing with each other to secure their long-term options within the next 12 months. AI and cloud investments are increasingly mobile, and hyperscalers are directing capital towards markets that can deliver **large volumes of electricity, at predictable cost, and with minimal connection risk**. Speed to power and the ability to secure long-term capacity have become decisive factors in where AI infrastructure is built.

³ Baringa's central Reference Case projection predicts a total demand of 617TWh by 2050, with data centre demand of 50TWh. NESO FES 2025 scenarios predict up to 71TWh of data centre demand. Total demand to date relies on DESNZ Digest of UK Energy Statistics data.

But without rapid action, constrained grid access and high electricity costs will undermine UK competitiveness and limit the AI growth opportunity

In contrast to the US, power users here cannot usually approach a single integrated state-backed utility with a proposal such as “*We can bring X capacity alongside our demand; can you provide a grid connection?*” There is generally no equivalent option in the liberalised markets of the UK and Europe; power supply and demand must independently seek various project approvals.

Therefore, the UK’s binding constraint is the inability to **connect large new sources of demand and generation to the grid at pace**. Congested transmission infrastructure, rapidly expanding connection queues, and planning and consent processes not built for today’s scale of electrification are materially delaying access to power for data centres, manufacturers, and energy intensive users. As a result, connection timelines now extend well beyond the investment horizons of hyperscalers and industrial users.

These constraints are compounded by persistently high electricity costs, with UK industrial electricity prices the highest in Europe. Large scale transmission investment and clean energy subsidies remain necessary, but they add near term cost pressure to an already uncompetitive system.

A renewable-led energy system will remain central to decarbonising the UK economy. However, renewables, energy storage, and grid expansion alone are unlikely to deliver the speed, cost certainty, and system resilience required. **Co-located, high energy density, and low carbon baseload power** – such as SMRs – offers a complementary and structurally scalable solution capable of anchoring AI-led growth, reindustrialisation, and long-term competitiveness.

3.3 AI hyperscalers want nuclear power and will pay for it

Advanced nuclear technologies – SMRs and AMRs – can supply clean, reliable, and co-located power to meet the needs of hyperscalers and offtakers

The size and **scale of individual SMR and AMR projects are more compatible with private financing** than GW-scale nuclear, with unit costs in the low billions. This helps to avoid the need for multi decade, balance sheet heavy investments and enables capital to be deployed in phases.

SMR and AMR offerings vary in size but are designed to be deployed in multi unit configurations that allow zero-carbon power capacity to be added incrementally, in line with the **staged growth of hyperscaler data centres** and other industrial demand.⁴ With baseload power now reaching high capacities above 90% for some pressurised water reactors, multi-unit configurations also have the potential to offer five-nines reliability (99.999%) – a challenging technical demand of data centres.

Advanced nuclear technologies also offer energy-dense solutions that can be situated near power demand. While co-located projects do not eliminate the need for grid access – connections are

⁴ Zero carbon in operation; lifecycle impact of 5.1-6.4 grams of CO₂/kWh according to the United Nations Economic Commission for Europe.

still required for security of supply – strategic siting can reduce reliance on congested transmission corridors and improve certainty over future power availability as demand scales. Baringa analysis suggests that private wire arrangements with the first SMR projects could offer end users a route to more cost-competitive electricity prices compared with grid supply alone.

Together, these characteristics make advanced nuclear well-suited to **long-term private power arrangements (PPAs)**, including direct PPAs, while driving UK energy security and supporting the net zero commitments of tech majors, hyperscalers, and other potential industrial offtakers.

This report focuses on hyperscalers as the offtakers to drive demand-led SMR deployments

While a variety of industrial offtakers and digital infrastructure providers have expressed a desire to secure power from SMRs and AMRs, **only hyperscalers have the underlying creditworthiness and demand profile required to unlock the financing for FOAK private-led SMR and AMR deployments**. Hyperscalers will ultimately set the competitive pace for deployments: the services they sell will create demand for digital infrastructure, which in turn creates demand for high-volume power. Their credit and balance sheets will feed through the value chain.

Other industrial offtakers and digital infrastructure providers are more likely to be involved in a ‘second wave’ of SMR and AMR deployments.

Hyperscalers are established buyers of clean power

The companies driving the AI revolution are already the largest corporate buyers of clean power globally. Amazon, Microsoft, Meta, and Google together have contracted more than 84 GW of clean energy as of February 2024⁵, largely through long-term PPAs that anchor financing for new-build projects.

This leadership sits within a broader corporate PPA market that has now amassed c.200 GW since 2008⁶ – greater than the entire generation fleets of countries like France, the UK, or South Korea, and showing that corporate demand can underwrite utility-scale capacity additions at national scale.

This track record matters for SMR and AMR projects. The same buyers that have de-risked renewables through long-term PPAs can play an equivalent role for firm, clean power using creditworthy commitments to unlock a lower cost of capital and accelerate delivery.

From renewables-only to firm power

Indeed, as access to power – not just carbon intensity – becomes a binding constraint for AI growth, hyperscalers are moving from renewables-only strategies toward firm, clean baseload technologies, including nuclear. This shift is illustrated by recent transactions in the US, summarised below.

⁵ Statistic from S&P Global article: *Nuclear bolsters top US hyperscalers’ clean energy portfolio, now over 84 GW, 2025*.

⁶ Statistic from BloombergNEF article: *Corporate Clean Power Buying Grew 12% to New Record in 2023, According to BloombergNEF, 2024*.

Major agreements between hyperscalers and nuclear in the US

- **Amazon** has invested in X-energy and is supporting a first 320 MW Xe-100 SMR project with Energy Northwest (expandable to 960 MW). It is exploring a Dominion SMR in Virginia, with a longer-term target of up to 5 GW of SMRs by 2039. It has also secured 960 MW of nuclear-powered data centre capacity at Susquehanna.
- **Google** signed a Master Plant Development Agreement with Kairos Power to develop 500 MW of advanced nuclear by 2035 and announced a FOAK deal with TVA to take up to 50 MW from an advanced reactor by 2030 to support its data centres.
- **Microsoft** has a 20-year PPA with Constellation to restart Three Mile Island Unit 1 (the 835 MW Crane Clean Energy Center) as early as 2027/28.
- **Meta** has announced agreements with Vistra, TerraPower, and Oklo supporting up to 6.6 GW of nuclear capacity by 2035 to power its Prometheus super-cluster.

Attention is now turning to Europe, with the UK seen as a potential gateway market. Hyperscalers are beginning early-stage engagements with UK SMR propositions to secure long-term power access for the next wave of large-scale data centre campuses, as illustrated by the EDF-Holtec-Tritax feasibility study at the former Cottam coal power station site.

Despite this alignment between AI demand, hyperscaler incentives, and SMR and AMR characteristics, a set of structural barriers continues to prevent private led SMR deployments at scale in the UK. These are examined in Section 4.



3.4 SMRs offer the fastest, but not only, route to market for the AI and nuclear opportunity

SMRs, AMRs, MMRs: Different offerings of advanced nuclear technologies

There are important distinctions between SMRs and other advanced reactors that affect the pace of route to market and applicability to the AI and nuclear opportunity.

SMRs use proven GEN III+ reactor technologies that have been deployed in large-scale nuclear for decades. These water-cooled technologies, including pressurised water reactors (PWRs) and boiling water reactors (BWRs), have extensive engineering development and operational history. SMRs typically have capacities of 200-500 MW.

AMRs are novel GEN IV technologies, primarily using molten salt or high-temperature gas reactor designs. In principle, AMRs offer advantages over SMRs for some applications. For similar power capacities, AMRs offer enhanced passive safety features, high temperature heat offtake (up to 950°C), and dispatchability benefits over SMRs, which could make them better suited for certain industrial or grid applications. However, the reactor technologies have not yet been proven operationally at scale.

Meanwhile, **Micro Modular Reactors (MMRs) are smaller – typically less than 200 MW and using either GEN III+ or GEN IV reactor technologies** – and may be more suited to micro-grid or remote applications.

This report focuses primarily on SMRs as the ‘next wave’ of advanced nuclear

FOAK SMRs are likely to be deployed by the mid-2030s, aligning with hyperscalers’ needs.

Several AMR propositions may be deployable in the 2030s, but a role in the longer term is more likely. Figure 2 provides estimates on timescales to deployment.

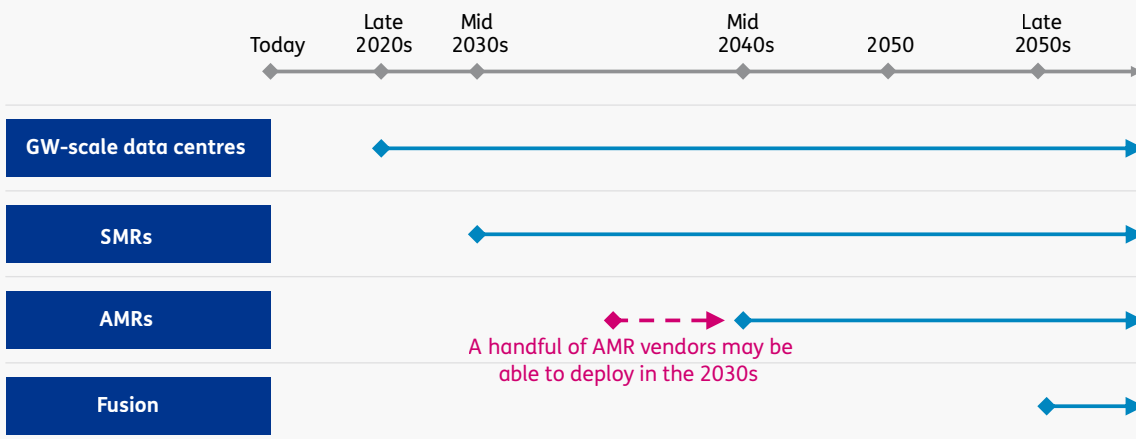


Figure 2: Estimated UK deployment timelines for GW-scale data centres, SMRs, AMRs, and fusion

Demand-led new nuclear:

A Government-last model through privately-funded advanced nuclear technologies

Foreword

1. Executive summary

2. Introduction and context

3. The AI and nuclear opportunity

4. Barriers to UK SMR deployment

5. Vision for demand-led SMR deployments

6. Implementing the vision

7. A year for action

References

4. Barriers to UK SMR deployment

Key takeaways

- **Demand growth and capacity build-out are de-linked**, increasing cost, delivery, and value for money risk for Government and industry.
- **Long-term revenue uncertainty remains unfinanceable for private capital** without tail-end revenue support.
- **Fragmented value chains and uncertain costs weaken propositions** for investors and first mover offtakers by exacerbating the challenge in managing FOAK risks.
- **High development costs are incurred at risk**, with insufficient clarity on access to support or route to market to justify early investment.
- **Uninsurable risks remain unfinanceable for private capital** without targeted Government protection.
- **Ownership of FOAK completion risk is a major barrier** to raising private finance.

4.1 De-linked energy supply and demand planning

The current state-led model to procuring generation capacity leaves UK plc and industry exposed to demand-supply mismatch risk

Decision-making on the amount and location of power generation built in the UK has been concentrated in Government approval processes, and Government-led procurement through renewable auctions has dominated the build-out of large-scale power capacity in the last 20 years.

This has created an ecosystem in which **decisions on generation capacity have been de-linked from actual power demand, creating a demand-supply mismatch**. Industrial end users have little direct influence over securing reliable power capacity when and where it is needed – beyond joining a long and uncertain connection queue. Generation build-out is reliant on forecasts for future power demand.

Figure 3 illustrates how the challenge in producing accurate demand forecasts – owing to the complex uncertainties in predicting technology, policy, and economic activity – compounds this issue. The result is that Government is exposed to the risk of either: (a) over-procuring capacity and burdening consumers with unnecessary system costs, or (b) under-procuring capacity and constraining economic growth.

This challenge is becoming even more acute as the **UK faces unprecedented and uncertain high-growth demand projections**, driven by AI and electrification. If the UK is to drive growth, capitalise on AI opportunities, and reindustrialise, there is more need than ever for the requirements of energy intensive users (demand) to be re-coupled with decision-making on generation build-out (supply).

This will: a) ensure better planning on energy supply, b) improve forecasts, and c) encourage solutions that minimise electricity costs for industries.

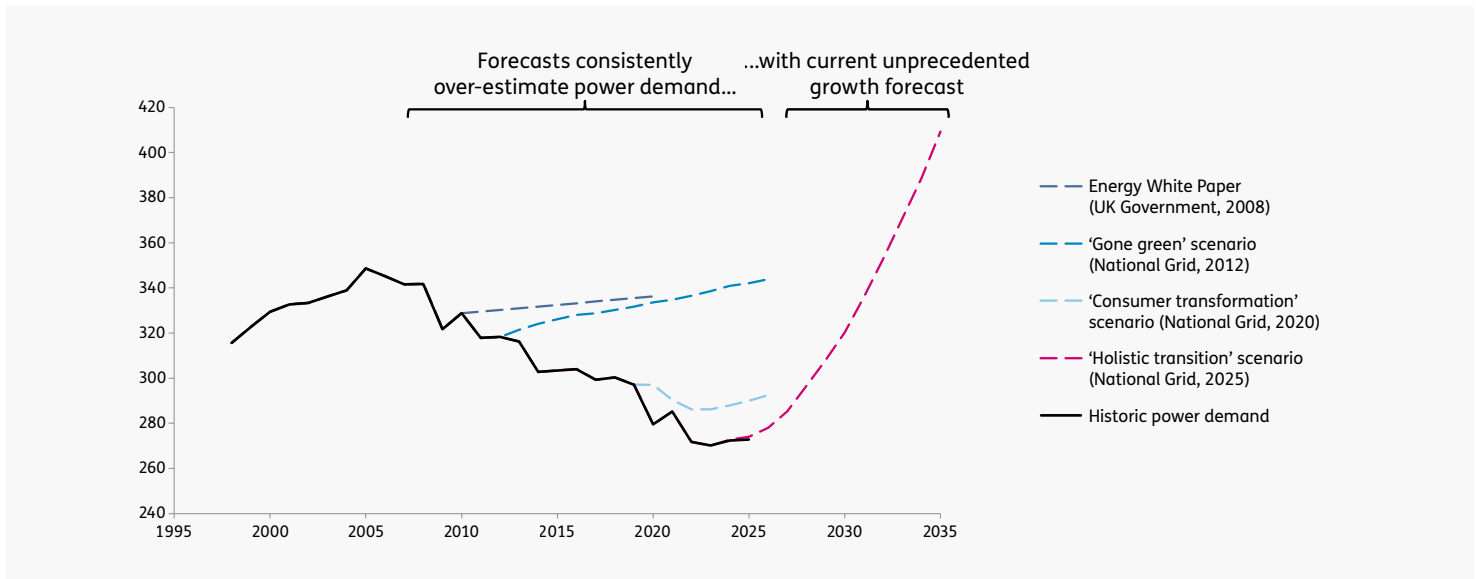


Figure 3: Projected versus actual electricity demand in the UK

Powering data centres and industry with SMRs could offer a solution, but connection type choice will have implications for Government support

There are two main options for addressing the demand-supply mismatch: co-locating generation with demand or connecting supply to demand via the grid. The ultimate choice for industrial end users is contingent on the cost-competitiveness of power supply and the level of control they (and/or Government) wish to exert over security of supply. This creates **two distinct markets for SMR projects** to pursue, each requiring different levels of Government support:

- **Grid-only connected SMRs** supplying industrial demand and/or consumers will require high upfront revenue support and risk protections to build investor confidence, as well as strong Government involvement to coordinate connection and transmission planning.
- **Behind-the-meter SMRs** co-located with data centres or industrial demand may need only targeted support for residual risks unfinanceable to the private sector, but must have committed offtakers from the outset.

Under the Framework, all **projects will need to articulate a strong value-for-money case for any Government support requested**. This is particularly important for co-located projects that primarily power data centres and industry rather than the grid, as such projects are effectively seeking taxpayer support without (in the main) supplying the wider consumer base.

This report's view and focus is that **Government can simultaneously increase confidence for investment in reindustrialisation programmes and look to reduce its own risk exposure** by backing behind-the-meter projects through the Framework. This is based on addressing the financing and delivery challenges described throughout this Section, and ensuring Government value-for-money decisions reflect the downstream system and economic benefits.



4.2 The structural tenor mismatch between contracting horizons and nuclear asset lifetimes

Long-lived nuclear assets cannot be financed on short-dated commercial contracts alone

A central barrier to demand-led and privately financed SMR deployment is a **structural mismatch between the operating life of nuclear assets and the duration over which energy markets can provide bankable, fixed-price revenue certainty**.

SMRs are designed to operate for 60+ years – materially longer than other generation assets such as gas, solar, or wind, which typically have 20-30-year lifespans. By contrast, the commercial instruments available to secure revenues – e.g. corporate PPAs or supplier contracts – are generally limited to 10-15 years, reflecting the risk appetite and creditworthiness of energy users and the horizons over which financiers are willing to underwrite fixed cashflows.

Full-life Government support can address the mismatch, but at high cost

The Framework recognises the absence of a clear revenue pathway as a barrier to private sector-led deployment, and signals willingness to consider providing revenue support mechanisms such as CfDs (subject to value for money and appropriate risk allocation). The Framework also does not explicitly rule out a Regulated Asset Base (RAB) model, but “*does not expect to provide revenue support to projects during their construction phase*” (such support is a key part of the RAB model for Sizewell C).

However, **full-life revenue support through a CfD or RAB shifts long-term price and volume risk onto consumers and Government**, and may be less attractive than private wire, co-located models.

- A full-life CfD, for example, provides fixed-price revenue to the generator hedged from wholesale prices. This prevents generators from signing fixed-price power supply contracts with end users such as data centres, as they cannot offer a fixed-price sale for the same generation. Revenue becomes fully subsidised by Government and taxpayers.
- A hybrid RAB model using a corporate PPA as the reference price instead of the wholesale market price could work in principle. However, in practice, if Government guarantees revenue on top of the PPA price (agreed bilaterally between the offtaker and generator), there is no commercial incentive for the generator to maximise the PPA price. On the surface, this is good for both generator and offtaker – subsidised revenue and a well-below market price PPA – but again comes with significant burden on Government and taxpayers.

Furthermore, such support mechanisms are likely to require bilateral negotiations, be administratively complex, and add costs to consumer energy bills. Uncertainty over the timing of and access to such contracts risks undermining UK-based SMR projects' attractiveness to both investors, who seek revenue certainty, and hyperscalers, who seek predictable routes to power.

Corporate PPAs are bankable – but only for part of the asset life

Corporate PPAs are widely used to finance energy infrastructure and are particularly well-suited to private wire and co located projects. For SMRs, they can provide stable, bankable revenues during the early years of operation, aligned with hyperscaler demand for firm, low carbon power.

However, PPA tenors are typically limited to 10-15 years. This reflects corporate balance sheet constraints and creditworthiness, and financiers' recognition of forward cashflows. For SMR projects that do not rely on full-life CfDs or RAB style models, this creates **a financing gap once the initial PPA expires**. Beyond that point, revenues are exposed to wholesale markets, the uncertainty of which likely makes it impossible to find long term project finance on affordable terms over an SMR's expected lifetime.

This does not preclude the use of PPAs – but it does mean that PPAs alone cannot support the full financing of a nuclear asset with a multi decade operating life.

Construction timelines add to the revenue challenge

SMR construction periods are expected to be between four to six years on top of a development period – longer than the typical procurement window of two to three years within which corporates contract for 'ready-to-build' renewables projects. This increases delivery and cost uncertainty at the point of contracting, making it challenging to agree fixed-price and delivery contracts.

This issue becomes more acute for co-located firm power projects where power access is directly dependent on project completion, reinforcing the need for revenue structures that can accommodate both long construction periods and long asset lives.

4.3 A complex, disjointed value chain with too many designs

Without design convergence on a handful of advanced nuclear offerings, critical nuclear resource will be spread too thinly, slowing progress

There are **50+ advanced nuclear designs globally in pre-licensing or licensing processes**⁷ and at least eight vendors engaged in the UK market – too many technology options for practical deployment in the UK owing to supply chain constraints, regulator bandwidth, and skills/capability bottlenecks.

- **Global supply chains** for several key components, such as pressure vessels and turbines, are already facing capacity constraints. There is a limited set of suppliers available to deliver the components for projects, and little can be done to resolve this bottleneck in the short term
- **Skills** are in short supply in key areas – a workforce gap of c.40,000 was identified in 2023⁸, with specific shortages in project delivery capabilities such as welding and project planning and controls.
- **UK regulator capacity** is constrained across the regulators (e.g. Office for Nuclear Regulation and Environment Agency), and they only have limited ability to manage multiple projects in parallel.
- **Nuclear operators** present in the UK are currently limited to a single company: EDF. Operator training will likely be required over the SMR development period for projects not utilising EDF, and/or will need to attract international operators to the UK from a limited pool of options.
- **UK site development and licensee expertise** requires unique nuclear experience. Acquiring a site licence is a critical step that must be completed during project development, but there are few professionals and/or companies with the relevant experience and expertise to do so.

The Framework outlines how enabling Government activities across these areas may help lessen the impact of constraints, however, the benefit of such interventions in scaling up UK deployment capacity will take time to materialise. In the context of mid-2030s deployment timelines, **there is only limited capacity for multiple – credible – SMR deployment programmes to sit in parallel alongside defence and GW-scale programmes.**

Design convergence is therefore a necessity. The Framework's PRA has the potential to be a vehicle for this process, simplifying the nuclear ecosystem for investors in tandem. However, a failure to converge on SMR technology offerings risks creating a market that is spread too thinly, allocating resources and private capital to non-credible projects. This would hamper the sector's ability to stand up resilient supply chains, create scale through orderbooks, and deliver projects to cost and schedule.

⁷ https://www.oecd-nea.org/jcms/pl_73678/nea-small-modular-reactor-smr-dashboard

⁸ <https://nuclearskillsplan.com/wp-content/uploads/2025/05/National-Nuclear-Strategic-Plan-For-Skills.pdf>

The UK lacks developers to convene delivery partners and lead collaboration on projects with Government, investors, and offtakers

Unlike traditional GW-scale nuclear projects, **there is currently no vertically integrated organisation in the UK to deliver SMR projects**. The required capabilities are spread across technology vendors, EPCs, developers and site licensees, and operators.

Moreover, the nuclear sector is experienced in developing projects for grid applications that are underwritten by Government or Government-backed entities, **but the nuclear sector only has limited experience in selling propositions to private offtakers and convening private-led partnership models** with built-in commercial risk-sharing mechanisms.

There is limited commercial capability – contained within only a few organisations – to:

- Provide the convening force to bring together partnerships and delivery capabilities from across the full value chain.
- Construct and contract mechanisms to manage risk across partners without significant Government underwrite.
- Interact with private investors and offtakers to communicate and build a market proposition.
- Collaborate with Government on developing the type of support required to deliver projects.

Figure 4 illustrates the complexity of solving these commercial challenges and establishing credible delivery partnerships in comparison with non-nuclear energy infrastructure and publicly backed nuclear projects. It highlights the number of stakeholders that need to be engaged and key market gaps.

The creation of GBE-N – which is seeking to establish a developer company – could in principle offer a pathway to address these market gaps for other projects. But in practice, it is unlikely to have the bandwidth to drive forward private-led projects in parallel with the publicly funded Wylfa project.

Consequently, **the shortage of credible private sector convenors and developer alternatives has become the critical bottleneck in building project pipelines** – and the limited private capital secured to date for UK SMR project development is a direct consequence. The formation of credible delivery partnerships is therefore critical if projects are to raise the £100s of millions required to take a project to financial close.

	Typical UK energy infrastructure development (non-nuclear)	Public-led SMR or GW-scale nuclear project development	Private sector-led SMR project development
Project lead/convenor	Utility or developer	End-to-end delivery organisation (e.g. GBE-N, EDF)	To be defined ?
Securing land access	Utility or developer	End-to-end delivery organisation	Nuclear site licensee or developer (may be same organisation)
Licenses, permits, and planning approvals			Developer
Building proposition to secure FID			Technology vendor
Technology delivery	EPC and/or technology provider	End-to-end delivery organisation	EPC
Construction			Operator: Operates power plant Utility: Manages sale of power
Operation	Utility and/or O&M partner		Primary: Private offtake Secondary: Grid
Offtake/customer	Primary: Grid Secondary: Private via remote PPA	Primary: Grid Secondary: Limited UK track-record	
Development risk	Financeable up to financial close	Financeable with Government support	To be defined ?
Delivery and operational risk	Apportioned through contracts		

SMRs require complex partnerships to be convened and contractual risk sharing mechanisms to be developed

Figure 4: The difference in partners and risk across energy projects, public-led nuclear, and SMRs

4.4 The development risk

Financing barriers are made greater by high development costs – financed at risk prior to financial close – and no clear route to market

It is standard practice in energy infrastructure for development costs to be incurred at risk prior to financial close. However, there are two critical factors that make this more challenging for advanced nuclear compared with other electricity generation projects.

Challenge one: The relative scale of project development costs

Developing an advanced nuclear project is complex, lengthy, and high cost. **£100s of millions of investment are required for project development** (in addition to similar sums for technology development and generic design approvals) over two to four years across site-specific engineering, licensing nuclear sites, securing environmental permits and planning consents, contracting offtake revenue, and preparing the project for construction delivery ahead of financial close. This development period is key to obtaining the right to build a nuclear project and to de-risk delivery.

Project development expenditure may amount to c.10% of total capex for a single SMR unit – far greater in absolute and proportional terms than renewables projects (typically 1-5%) – although multi-unit site deployments may reduce this materially.

Challenge two: The absence of a credible ‘investor pull’ from the current route to market

Private development capital can be mobilised at scale when there is confidence in future access to a clearly defined, bankable Government support mechanism. This has been proven in the renewables sector with the Renewables Obligation and, more recently, CfD schemes. Investors willingly funded projects through planning, permitting, and development on the basis of well understood eligibility rules, allocation processes, and contract structures, even before support was formally awarded.

The Framework provides a clear signal that Government recognises and is willing to address this challenge through targeted revenue support. While the detailed structure and access arrangements for that support are yet to be set out, the implication is that Government will retain flexibility to develop appropriate, and potentially project-specific, routes to market as projects mature.

For investors to have the confidence to deploy £100s of millions of capital at risk, **the Framework will need to convert Government intent into a bankable route to market** by providing greater clarity – as early into project development as possible – on how the revenue support will be priced, structured, and accessed. It will also need to provide assurances that the support will be available at the point of financial close. Without such assurances, rational investors will likely delay or limit development spend, reducing pipeline depth and slowing delivery.

In this context, the National Wealth Fund can help catalyse early-stage development and crowd in private capital, but its involvement is not essential if such assurances are provided in a timely fashion.



4.5 First-of-a-kind project delivery risk

FOAK projects carry elevated uncertainty and higher financing costs

FOAK projects of any asset class face greater uncertainty in their underlying cost base. This is because the technologies, delivery models, and supply chains required to deliver the asset are still being established.

Offtakers inevitably want to buy power from cheaper Nth of a Kind (NOAK) units – no one wants to buy more expensive power. The Framework rightly identifies that SMRs are seeking to mitigate the FOAK cost challenge by ensuring high utilisation of existing off-the-shelf components and developing credible cost estimates based on proven supply chain and construction data.

However, at this stage for advanced nuclear technologies, suppliers have limited historical data on productivity, fabrication times, engineering complexity, and integration interfaces. Construction and delivery risks will be encountered for FOAK units, and costs will be higher. This creates a collective action problem: if everyone waits to secure NOAK power, there will be no offtake for FOAK projects, so NOAK benefits will never be realised.

There is a barrier for ‘first mover’ offtakers if they are exposed to uncompetitive or uncertain power costs



Elevated FOAK costs could prevent initial SMR projects providing a competitive PPA product to offtakers at financial close. For example, a typical fixed-priced PPA structure – as desired by offtakers – could mean revenues were fixed while cost overruns remained possible. This could increase financing costs because of FOAK delivery risk, raising the overall costs the PPA would be financing and pushing up the required PPA price to uncompetitive levels.

This dynamic can discourage early PPA offtakers, who know they may face materially higher costs simply for being first. As a result, FOAK projects will face a barrier in attracting anchor offtakers, which will delay deployment and slow progress towards the cost reductions achievable from later projects. The risk is compounded if it prevents the building of a project pipeline and orderbook, which in itself can allow the nuclear supply chain to manage and spread risk across a fleet of projects.

Instruments that spread risk across partners and SMR fleet delivery will likely be necessary to provide a solution that prevents first movers being unfairly punished – and avoids this ‘chicken and egg’ conundrum.

4.6 High-impact, low-probability investor risks

Investor exposure to HILP risks that cannot easily be insured against could prevent the financing of nuclear projects

The Framework rightly identifies investor concern over difficult-to-insure HILP risks and the material deterrent this presents to private capital. By nature, these liabilities are difficult to bound/quantify and are qualitatively different from commercial risk. Even where projects are inherently attractive and well-structured, such risks cannot be efficiently priced or borne by private investors without Government support. Examples include:

- **Sovereign risks**, such as future law changes that force the premature closure of power plants.
- **Regulatory risks**, with unbounded financial costs associated with regulatory reinterpretation and power plant retrofits that were not required at design stage.
- **Nuclear liabilities** associated with environmental and social remediation after a nuclear accident.

Projects are also unfinanceable with unbounded completion risk

Unlike other HILP risks which stem from Government or regulatory approval decisions, completion risk – associated with unbounded and unquantifiable construction cost overruns that the private sector cannot absorb – is not so clear cut. Defining this risk depends on how:

- Commercial structures apportion FOAK construction uncertainties to different parties involved in SMR deployment.
- Projects separate poor commercial performance from genuinely unforeseeable overruns caused by external factors – a distinction made more complex by completion risk interdependency with other FOAK challenges such as establishing new supply chains.

In any case, **SMR projects are considerably more challenging to finance if completion risk remains unbounded**. It is therefore positive that the Framework recognises the importance of a ‘last resort’ insurance backstop and the role it could play in preventing residual risks from undermining project viability while leaving ordinary commercial risks with the private sector.

Further detail on the nature of a ‘last resort’ insurance backstop will be essential to ensure that FOAK **risks are properly bounded, quantified, and allocated within the private sector** – giving parties appropriate incentives where they can control outcomes and **reserving a limited, targeted Government role** to prevent residual risks threatening project viability. This is potentially one of the most challenging elements of the model, and will require industry and Government to work together to develop practical solutions.

Demand-led new nuclear:

A Government-last model through privately-funded advanced nuclear technologies

Foreword

1. Executive summary

2. Introduction and context

3. The AI and nuclear opportunity

4. Barriers to UK SMR deployment

5. Vision for demand-led SMR deployments

6. Implementing the vision

7. A year for action

References

5. A vision for demand-led SMR deployments

Key takeaways

- **A model built on an upfront PPA with tail-end revenue support and risk protections can avoid a £2 billion cost to consumers per SMR unit over a 35 year period versus an upfront CfD.**
- **The nuclear sector must bring forward attractive and credible business models and delivery plans** by convening delivery partnerships of technology vendors, developers, EPCs, and utilities that integrate risk, governance, and business model replication from the outset.
- **Hyperscalers should offer bankable PPAs and provide early, credible engagement with projects.** A more active role in development is required versus mature renewable PPA markets – including an option for cash injection – in return for reliable and cost-competitive access to firm power.
- **Government’s role is targeted and residual, focused on protections against unfinanceable risks (including completion risk) and providing a revenue backstop through a standardised support package.** By keeping focus tight, the impact on consumer bills and public finances is minimised.
- **All parties should collectively manage FOAK uncertainties to enable scale and cost reductions.** Risks must be bounded and pooled at project and fleet levels, enabling early projects to proceed at competitive prices and creating a pathway to progressively lower costs over time.



Positioning the vision for a demand-led SMR deployment model alongside the Advanced Nuclear Framework – with AI and nuclear growth as a first use case

As discussed in Section 2, the **Advanced Nuclear Framework** provides an important step forward in setting out how private-led advanced nuclear projects can progress in the UK. It establishes a PRA process, recognises the role of **HILP protections**, and signals the potential for **revenue support** where this offers value for money.

But the **Framework is intentionally high level**, focusing on principles, eligibility, and process. It does not specify how or when revenue or risk support would be accessed, the contractual form support could take, or how early stage development risk is sufficiently reduced to mobilise private capital.

This Section is therefore **complementary to the Framework**. It sets out how the Framework's principles can be translated into **bankable propositions** and how – by keeping system challenges and stakeholder needs in clear focus (see Figure 5 and Figure 6) – **Government involvement and risk can be further reduced** from where the Framework stands today. Indeed, the solutions identified have **precedent across UK energy markets**, as discussed in Section 6.5.

And crucially, the vision defines **a demand-led model**, addressing a whole system challenge facing the UK – where supply and demand are both expected to grow substantially but with high uncertainty in terms of both scale and geography. Though **AI and nuclear growth has been identified as a first use case of the proposed model**, the model is also relevant for other industrial-nuclear use cases and may be applicable to other forms of generation technology.

The key principles this Section clarifies are the:

- Role of delivery partnerships and convening power.
- Importance of early hyperscaler engagement and staged commitments.
- Design of a backstop revenue mechanism for long term tail risk.
- Importance of Government protections to manage HILP and completion risks.
- Use of project- and fleet level risk pooling to manage FOAK exposure.

Taken together, the Framework and the model described in this Section provide a coherent pathway: the Framework establishes *which projects progress*, while this Section describes *what those projects must look like* if they are to secure investment and reach delivery at scale. Section 6 continues to build on this by outlining the *practical next steps for implementing the vision*.

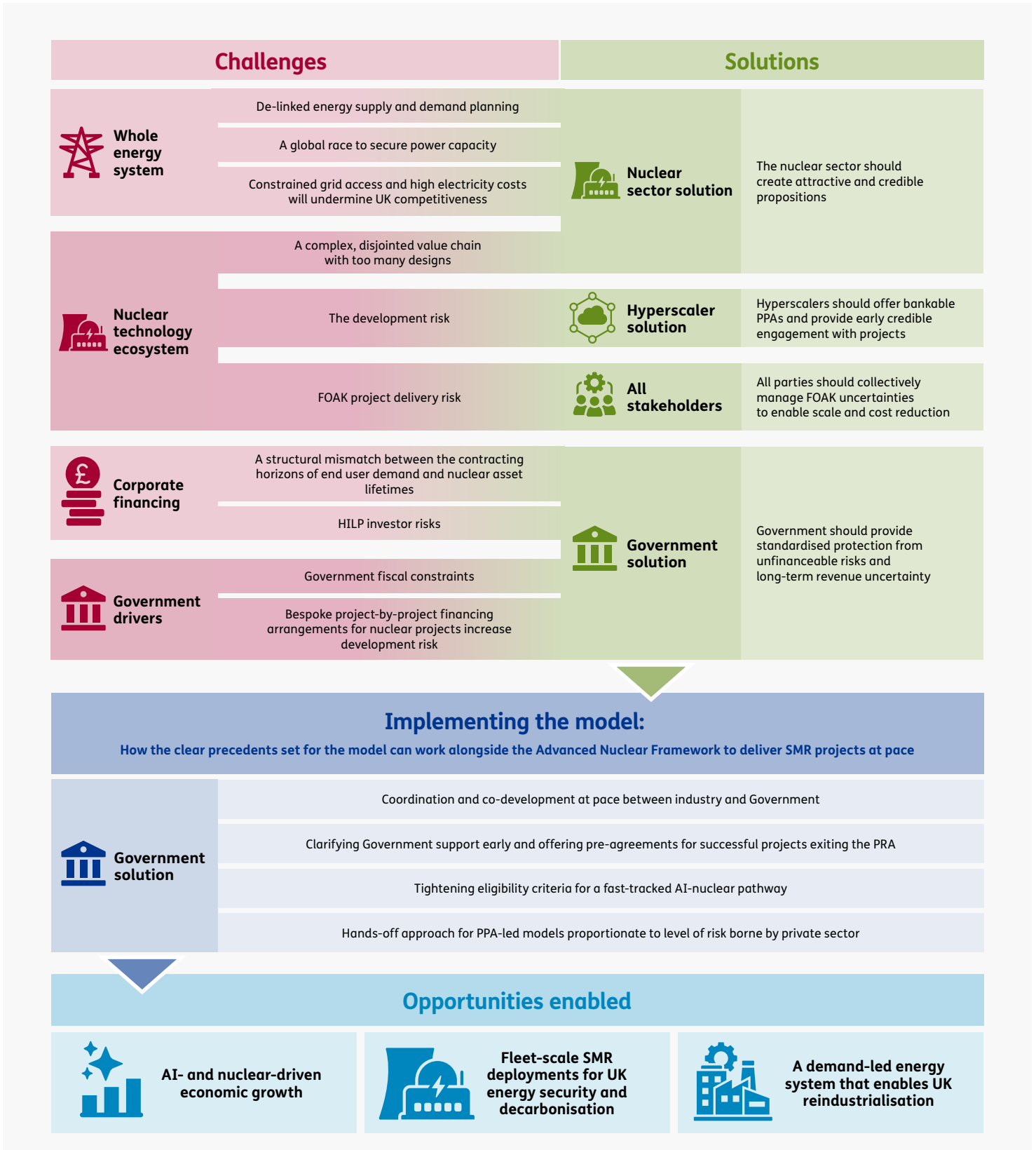


Figure 5: How the vision and implementation of a private demand-led model (Sections 5 and 6) create compelling propositions for Government, investors, and offtakers by addressing key challenges








	Key offering	Associated benefit of model
 <p>Nuclear Sector</p>	<ul style="list-style-type: none"> • Bring forward credible and attractive propositions • Convene, at pace, credible delivery consortiums • Innovate with experience, new designs with proven roots 	<ul style="list-style-type: none"> • Bankable revenue stream secured • Funding for development and construction attracted • Fleet deployments enabled (replicable approach)
 <p>Hyperscalers</p>	<ul style="list-style-type: none"> • Early project engagement, with potential investment: <ul style="list-style-type: none"> – Development funding support (option) – Site acquisition (option) 	<ul style="list-style-type: none"> • Capacity secured for the short term and the long term • Low-carbon power from a dedicated and reliable source <ul style="list-style-type: none"> – Preferential PPA terms (if option(s) exercised)
 <p>Utilities/networks</p>	<ul style="list-style-type: none"> • Ensure data centre grid connection availability • Provide power to data centre during SMR construction and potentially handle data centre PPAs (inc SMR PPA) 	<ul style="list-style-type: none"> • New demand and new supply enabling low-carbon growth • Funded offtake or asset equity to participate financially
 <p>Government</p>	<ul style="list-style-type: none"> • Standardised support package offering: <ul style="list-style-type: none"> – Backstop revenue support mechanism – Construction completion and HILP risk protection 	<ul style="list-style-type: none"> • Private sector-led projects enabled – at pace and scale • Direct funding avoided, but support unlocking growth • Zero cost to consumers in most likely scenarios
 <p>All</p>	 <p>Vision for a new private market Collaboration to realise the vision Risk pooling to make it work</p>	 <p>Ability to share in risk and reward of project Lowering risk for financial investors Reducing funding costs to transform economics</p>

Figure 6: What each party needs to offer and the benefits they will access

5.1 The nuclear sector should create attractive and credible propositions

The nuclear sector must create attractive and credible propositions

Government intervention and hyperscaler engagement only make sense if the nuclear sector can first present propositions that are worth backing. A private demand led SMR model succeeds only if the sector brings forward propositions that stand up commercially and operationally – i.e. that are both **attractive** and **credible**.

Attractive propositions are those that work in practical, commercial terms for offtakers and investors. Figure 7 shows that in practice this means clarity on:

Price	A route to power prices that are competitive with alternative firm power options for hyperscalers and other large industrial users.
Timing	Credible delivery schedules aligned to hyperscaler build-out timelines in the mid 2030s, and paired with 'bridging power' solutions that enable earlier data centre deployment.
Location	Sites that are capable of being consented, licensed (EN-7 compatible), and connected to the grid, and where data centre and other industrial demand can be co-located with SMR generation to reduce network congestion.
Scale	Unit sizes and multi-unit configurations that can meet large, 'lumpy' demand (e.g. 200–500 MW tranches) and support phased expansion.
Replicability	The ability to repeat the proposition across sites and projects to capture fleet deployment benefits, rather than relying on bespoke, one-off solutions.

Figure 7: Criteria defining attractive propositions

The Framework's PRA provides a well-rounded assessment to identify credible propositions but opts for a non-prescriptive approach to assessing projects. **Credible propositions**, financing model aside, **are those that meet a minimum set of prescriptive criteria**, as shown in Figure 8:

Reactor technology	Based on or replicating existing reactor designs that have proven evidence of operation in civil or defence applications, and a well-capitalised technology vendor.
Capable developers	Or delivery leads, with experience integrating complex infrastructure projects and experience holding nuclear site licences.
Realistic supply chain	With established suppliers and power plant designs that utilise a high degree of 'off-the-shelf' components.
End-to-end partnerships	With capability convened across technology vendors, developers, site owners and licensees, EPCs, operators, and utilities – plus hyperscalers, when bringing propositions to investors.
Governance and execution capability	With clear accountability, incentives, and risk allocation across consortium partners.
Bounded uncertainties	Delivery, cost, and schedule uncertainties are identified, allocated, and capped where possible, underpinned by agreed tech vendor and EPC cost positions, either fixed or banded, with robust credit support.

Figure 8: Criteria defining credible propositions

The nuclear sector must convene delivery partnerships, turning fragmented capabilities into compelling propositions for offtakers and financiers

Building attractive and credible propositions requires a **convening force** capable of assembling coalitions that can deliver end to end commercial and execution capability. This role is about more than coordination: it is the ability to integrate technology vendors, EPCs, operators, site owners, and offtakers into a single delivery proposition – and to manage the complex commercial negotiations that sit between partners internally and externally with investors, offtakers, and Government.

The desired outcome is a **single, accountable interface** for investors, Government, and offtakers that is underpinned by a credible commercial spine, as shown in Figure 9. In practice, this can take several forms: a developer led structure, a consortium proposal, or a joint venture delivery vehicle that pools expertise across organisations. What matters is not the form but the presence of clear accountability, coherent governance, and aligned incentives across the delivery chain.

This approach is consistent with the Advanced Nuclear Framework’s emphasis on developer capability within the Government’s PRA, which allows for developer led, joint ventures, and consortium proposals. In that context, the Framework’s **developer capability plan** criterion is likely to be a key differentiator: projects that can demonstrate genuine convening power, clear governance, and **contractual risk pooling mechanisms** within their commercial structures will present a materially stronger, more investable proposition.

Risk pooling is discussed further in Section 5.4.

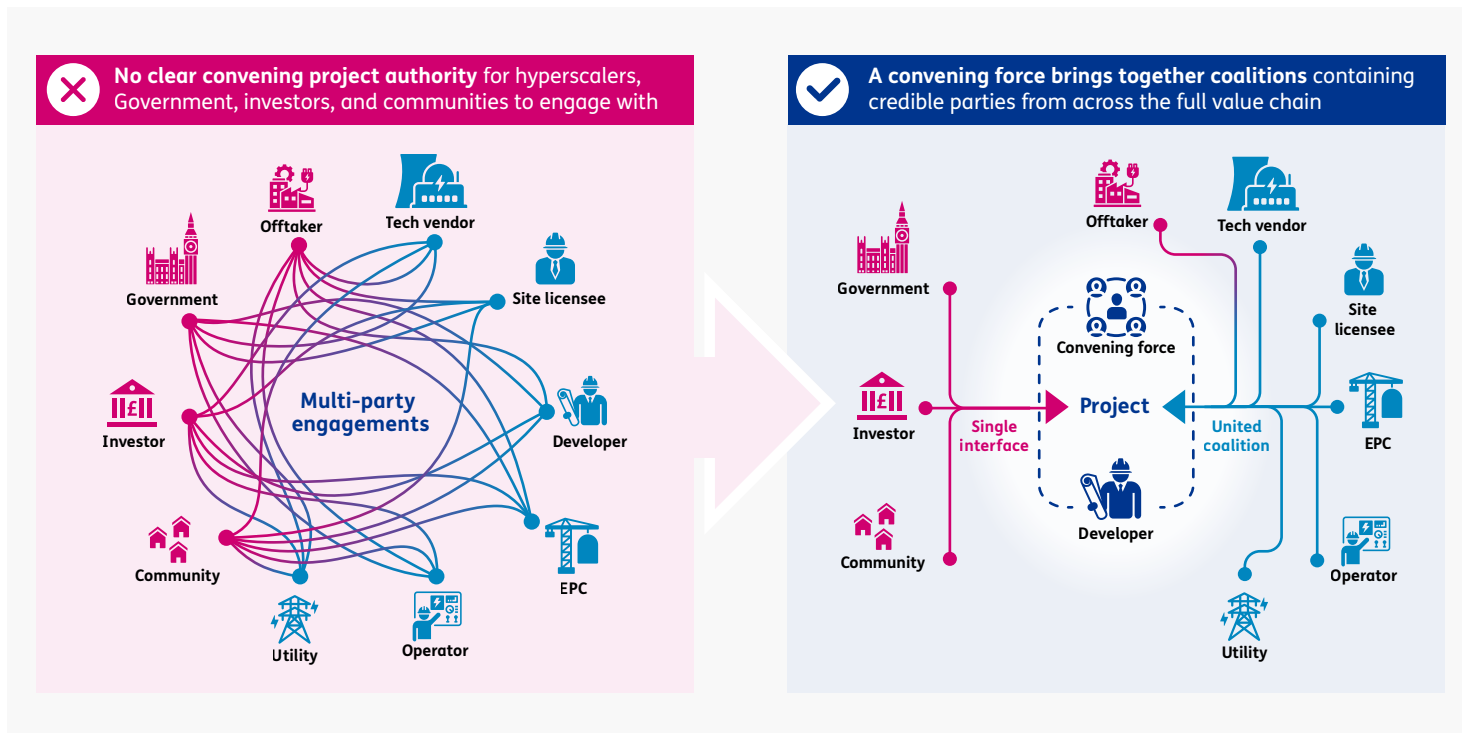


Figure 9: Illustrating the role of a convening force to bring together coalitions/delivery partnerships

Energy parks: An example business model proposition with AI data centres as a first use case for private demand-led SMR projects

An energy park is where an SMR site, of one or multiple units, is co-located with large energy users such as data centres or other industrials. This represents an attractive opportunity for AI and nuclear growth, with significant technoeconomic upsides. As a demand-led model, it is applicable across industrial use cases – and could help sustain UK industrial strength and reindustrialise the economy.

Model premise

In the near term, the **anchor offtaker is likely to be a data centre**. The data centre is constructed adjacent **to or near a multi-unit SMR site** – e.g. in a Government-enabled AI growth zone. Power is delivered by private wire, enabled by 15-20-year corporate PPAs. This configuration is cost-competitive and technically attractive:

- FOAK unit cost **risk is spread across multiple units** into a lower-cost blended capex rate.
- The high-capacity factors of SMRs (95%+ with PWR technologies) and multi-unit redundancy offer a **pathway to 99.999% power reliability**.

The model has whole UK system benefits across offtakers and consumers – alleviating power transmission constraints, stabilising power prices, and reducing overall system costs.

Technoeconomic upsides

In the longer term, other industries could also benefit from the energy park model owing to thermal utilisation (heated steam offtake) in addition to electrical power, which can significantly increase overall plant energy efficiency.

This approach creates value out of otherwise wasted heat, provided the SMRs are co-located with (or within a few km of) the end user. **Baringa analysis suggests that a c.20-30% reduction in the cost of electricity can be achieved**. SMR sites near industrial clusters, such as Tees Valley and Hartlepool, are therefore prime locations for energy park deployments.

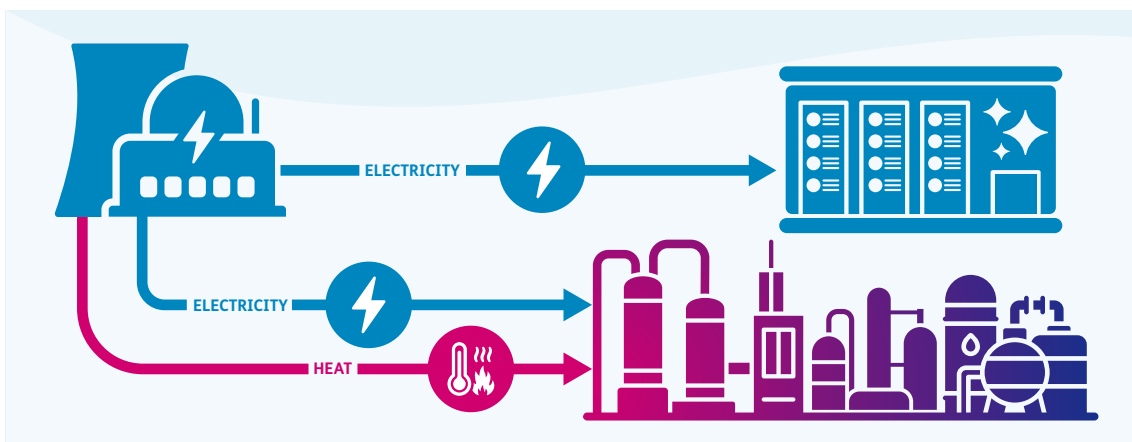


Figure 10: Example energy park model with anchor data centre and co-benefiting industrials (such as chemical works) and offtake of both heat and electricity

Government enabler: Fast-tracking SMR grid connections

The Government's AI growth zones already commit to faster grid connections, reduced planning barriers, and discounted electricity prices for data centres where strategic siting reduces whole system costs. However, the **current approach does not directly connect data centre demand to SMR supply** – SMR grid connections are at risk of being caught up in the grid connection queue.

Government could resolve this issue by creating a linked connection route for SMR plus data centre (or other large industrial) projects, with linked milestones. This could involve fast-tracking approval of developer-built transmission spur connections and/or providing bankable tariff credits that reward SMR co-location projects offering whole energy system benefits (such as transmission constraint relief).

Industry enabler: Bridging the energy gap

SMRs are unlikely to be operational ahead of the mid-2030s, but hyperscalers intend to build data centres ahead of this date. Thus, favourable energy park models will need to establish transitional energy sources, be it an early grid connection or a local energy source, during the period SMRs are being constructed. The long-term, low-carbon, and affordable capacity is secured once the SMRs are operational and can provide behind-the-meter power.

Utility involvement in delivery partnerships is therefore a key enabler – ensuring that access to power is established ahead of SMR deployments.

5.2 Hyperscalers should offer bankable PPAs and early, credible project engagement

Early hyperscaler engagement can convert SMR development into a bankable investment by making credible long term demand visible

Under a private demand-led SMR model, projects would be financed primarily on the basis of long term (15-20-year) corporate PPAs agreed with hyperscalers or other large offtakers.

Indeed, hyperscalers have a clear mandate and competitive need to secure long-term, low-carbon, and firm power capacity – and are currently **the only offtaker capable of underwriting 15-20-year nuclear PPAs in the UK**. Nuclear power has been identified as a preferred technology option for their data centres.

However, **hyperscalers cannot be passive recipients of power** in a private demand led SMR model. Taking an SMR from concept through siting, consenting, licensing, and detailed design requires substantial expenditure at risk by reactor vendors, developers, investors, and key supply chain participants – in the order of £100s of millions. That expenditure is only rational where there is a credible expectation that the project will ultimately secure a viable long term offtake arrangement. Without this, projects risk being technically robust but misaligned with offtaker requirements, as offtaker input influences sizing, siting, phasing, grid interfaces, and delivery sequencing.

In the absence of early signals from hyperscalers, projects will struggle to raise capital to progress through the development journey. Hyperscaler engagement therefore performs a gating function, materially determining whether FOAK projects progress through development to financial close; it converts an opportunity into a proposition that market participants are willing to fund.

Early engagement enables hyperscalers to shape projects and negotiate more preferable PPA terms – in addition to securing long-term power capacity

In practical terms, hyperscalers can make the demand proposition credible in two ways:

- **By engaging early in project development**, providing structured signals of intent that give vendors, developers, and investors confidence to commit capital to take projects through early development milestones. Examples are shown in Figure 11.
- **By making progressively stronger commitments as projects advance, with the option for development investment or acquisition of site(s)** – with off-ramps linked to stage-gated milestones. This provides clarity and reassurance to investors, making SMRs financeable and bridging the gap between early development risks and long-term revenue certainty.

In return, the benefits to hyperscalers are:

- **Secure long-term capacity**, initiating with SMR completion in the mid-2030s.
- **Secure short-term capacity** from c.2030, where projects provide a transitional energy bridge solution while SMRs are being constructed. This provides a potential off-ramp energy option for hyperscalers if SMR projects are delayed or incomplete.
- **Preferable PPA price terms**: a Baringa analysis indicated that co-locating data centres with SMRs could lead to a cost of electricity lower than retail electricity prices or PPAs secured at end of the development period.
- **Option to re-contract PPAs at lower cost** after approximately five years of operation by building conditions into initial PPA heads of terms – i.e. the ability to secure lower PPA costs once actual project costs are understood, if they are lower than forecast.
- **Access to techno-economic upsides/further cost reductions** through co-location with other industrial end users that require heat offtake.

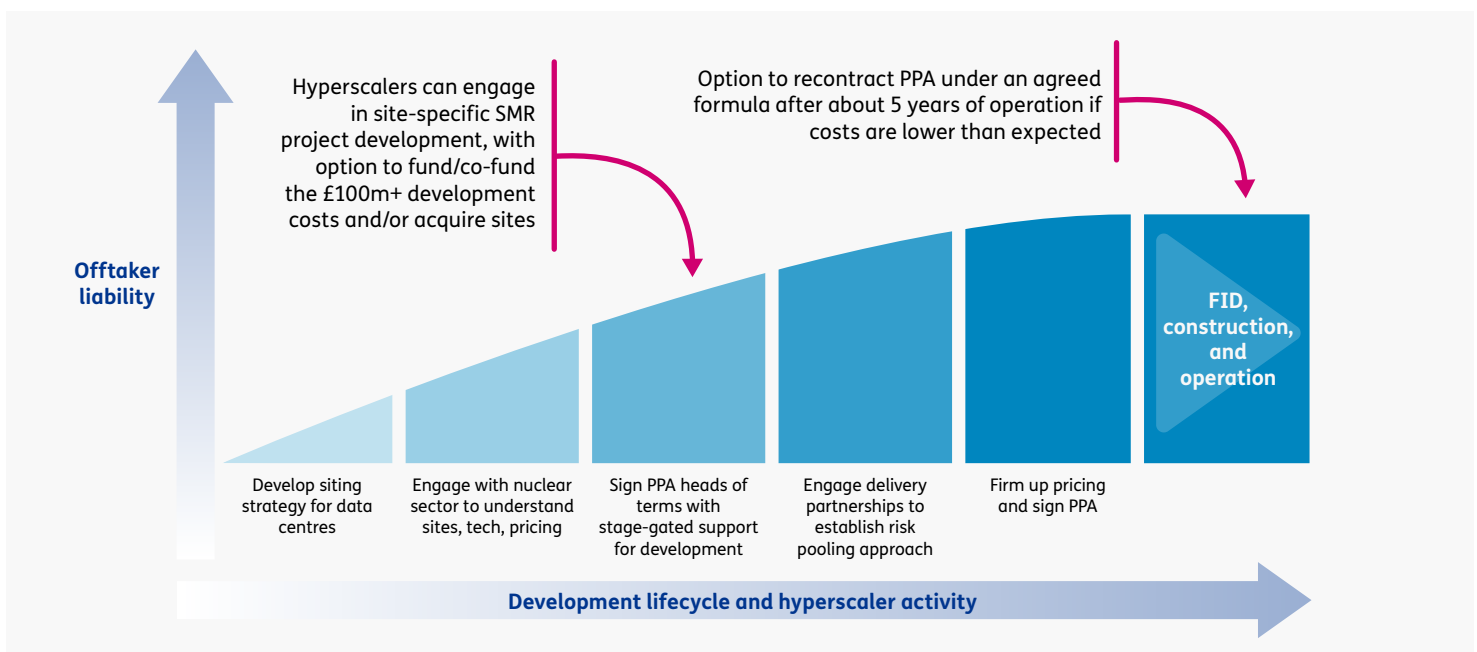


Figure 11: Potential approach hyperscalers could take to enable SMR deployments and secure long-term power

5.3 Government should provide protection against unfinanceable and long-term risks

Government's role is to enable private-led projects by underwriting residual, unfinanceable risks once credible supply and committed demand are in place

In practice, this means Government should step in **only where projects that are otherwise technically sound face risks that the private sector cannot reasonably price or absorb**. Indeed, where delivery partnerships are credible and long term demand is committed, projects should largely proceed on their own commercial terms without Government directing delivery.

The Framework rightly identifies two key residual risks that justify Government involvement:

- **Long term revenue risk** reflects the difficulties of contracting revenues upfront for 60+ year nuclear asset lifetimes.
- **Political and regulatory risk over the asset lifetime**, including sovereign risks that are uninsurable and unfinanceable in private markets (HILP risks).

The importance of Government's intent to offer relevant protections and support against these residual risks should not be understated. Such mechanisms are foundational to enabling private-led deployments; without them, neither the nuclear sector nor investors are likely to be able to progress projects.

Section 6.2 outlines proposals for how these support mechanisms could be structured to be financeable in practice.

Backstop revenue support: Enabling bankable long term revenues without crowding out private PPAs

Government can catalyse private investment and enable SMR deployments without consumers being expected to pay for those deployments.

A revenue backstop provides a targeted way for Government to address long term revenue risk without replacing private offtake or taking control of project economics. This helps create a replicable financing model and avoids the need for bilateral negotiations on a project-by-project basis.

Under a revenue backstop, projects would be financed primarily on the basis of long term corporate PPAs agreed with hyperscalers or other large offtakers. Backstop revenue support would only apply after those PPAs expire and be priced at a discount to them. As a result, projects will be incentivised to secure a new long term contract in the market at a better price, if one is available.



A well-designed revenue backstop could reduce upfront PPA prices with zero expected cost to consumers or taxpayers

The backstop should be set above prices that investors would assume under a purely merchant outlook today, but below central expectations for long-term capture prices. This pricing structure **preserves strong incentives for the generator to secure follow-up corporate PPAs or market revenues at prices above the backstop, making mechanism activation highly unlikely** in normal market conditions.⁹

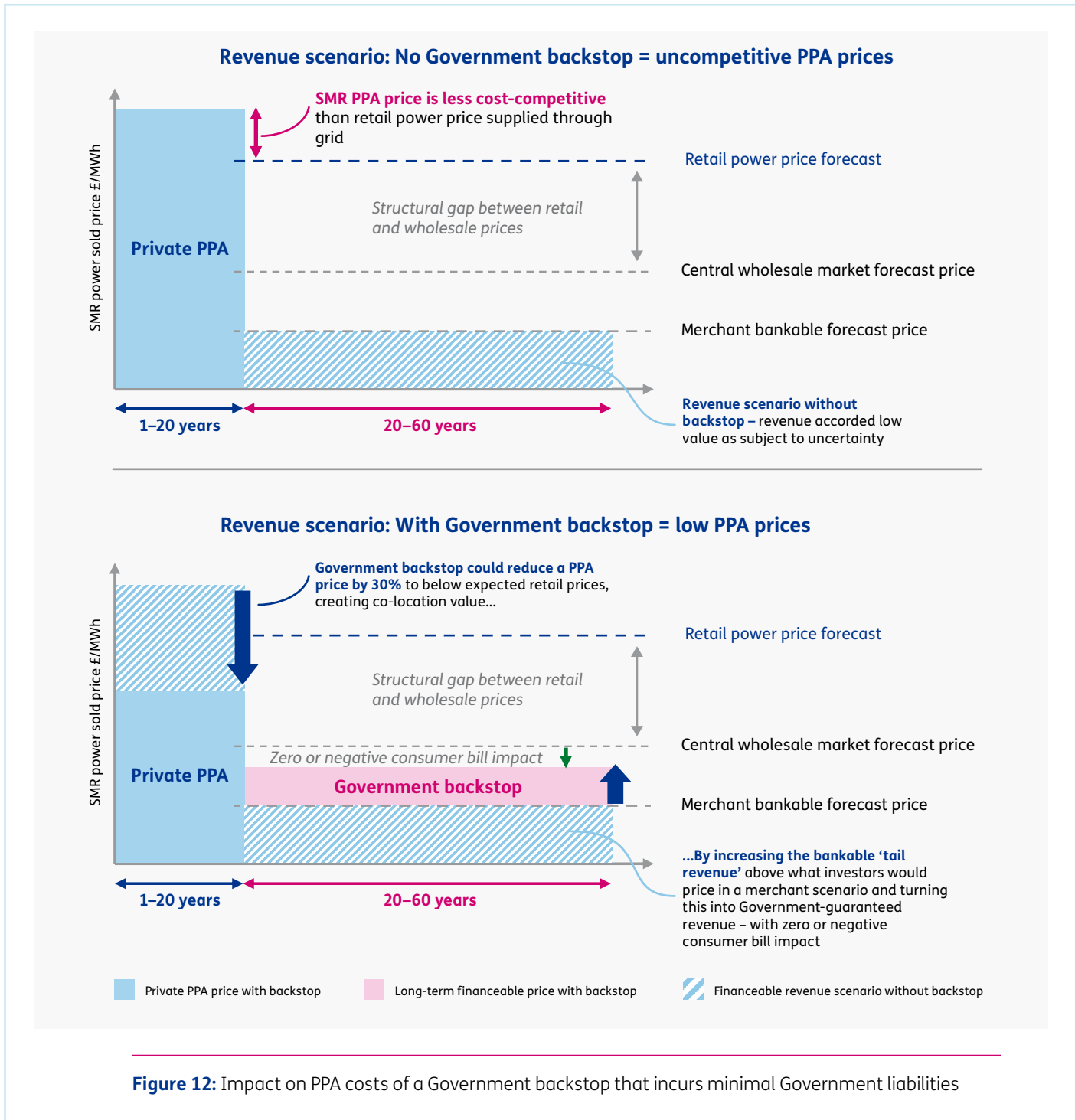
As a result, **the backstop would only be triggered in downside scenarios where power prices are materially lower than current expectations.** In such circumstances, overall electricity system costs – and consumer bills – would already be significantly lower than today. **Any residual backstop payments in those scenarios would therefore be affordable and proportionate,** rather than adding pressure to a high-price environment.

To illustrate the scale of impact, we have modelled a backstop priced at £60/MWh (in real 2025 prices), as shown in Figure 12, aligned with DESNZ’s projected wholesale prices for the 2030s (and significantly lower than their projections for prices in 2050),¹⁰ but well above the ‘low’ price case typically used to value merchant tail revenues in the absence of support. Under these assumptions, the presence of a backstop could **reduce up front PPA costs by around 30% while maintaining zero expected cost to consumers.**

A full assessment would be required to set the backstop level in practice so it balances risk allocation, investor confidence, and value for money for the Government.

⁹ This is similar in concept to the ‘Offtaker of last resort scheme’ under which CfD generators can access a backstop PPA at a discount to power prices if commercial PPAs are not available. See <https://www.gov.uk/government/collections/power-purchase-agreement-scheme-offtaker-of-last-resort> for further details.

¹⁰ Source: DESNZ Energy & Emissions Projections 2024 to 2050



Therefore, the function of the backstop revenue support is not to set the primary power price, but to put a credible floor under long term revenues. Indeed, the mechanism allows investors to ascribe value to a much larger proportion of the asset life, materially improving project financeability by ensuring that revenues beyond the initial PPA period are bankable.

A revenue backstop can deliver the benefits outlined below, provided developers and investors receive sufficient confidence – as early as possible during the development phase – that this support will be available to eligible SMR projects. Without early clarity on the nature of the backstop support, development capital will remain scarce and expensive, increasing overall costs.



Benefits of a revenue backstop

By addressing only the long term tail of revenue risk, the backstop revenue mechanism lowers the cost of capital of SMR projects without distorting early life price signals or displacing private PPAs.

The benefits are material:

- **Up to £2 billion cost avoidance to consumers** (real terms) per deployed SMR unit over 35 years.¹¹ Backstop revenue payments are only triggered in low price scenarios, only after private contracts have expired, and only if follow-on PPAs are not secured.
- **Lower PPA prices in the early years for offtakers**, as investors no longer need to recover the full asset value over the initial contract term.
- **Greater willingness to fund development**, as long dated revenues become bankable at FID.
- **Clear alignment with private demand led delivery**, reinforcing rather than undermining hyperscaler led demand.
- **Enabling whole energy system value and private wire projects**, alleviating grid constraints and reducing network upgrade costs expected with non-SMR projects.

The **standardised revenue backstop is also an enabler of multi-unit SMR sites, which are optimal for SMR economics**. AI and nuclear energy parks will very likely feature multiple SMRs feeding one or more data centres. They may also feed additional behind-the-meter demand and potentially grid export. Each additional unit is likely to enable further economic growth, and a standardised backstop could support this capacity without the need for bespoke negotiations for every unit.

With a **hyperscaler as the anchor tenant** (or other similarly credit-worthy industrial anchor), additional spare SMR capacity can be sold through a variety of PPAs with utilities and/or other industrials, and potentially some supply to the grid. Hence, the SMRs could provide power (and potentially heat) to multiple industries and local businesses. Figure 13 indicates the ‘plug-and-play’ nature of revenue options throughout asset life, with the backstop providing certainty for financing even if never used.

¹¹ Assuming 4 x 300 MW SMR units per project and a Hinkley Point C-style CfD with a strike price of £130/MWh implemented over 35 years.

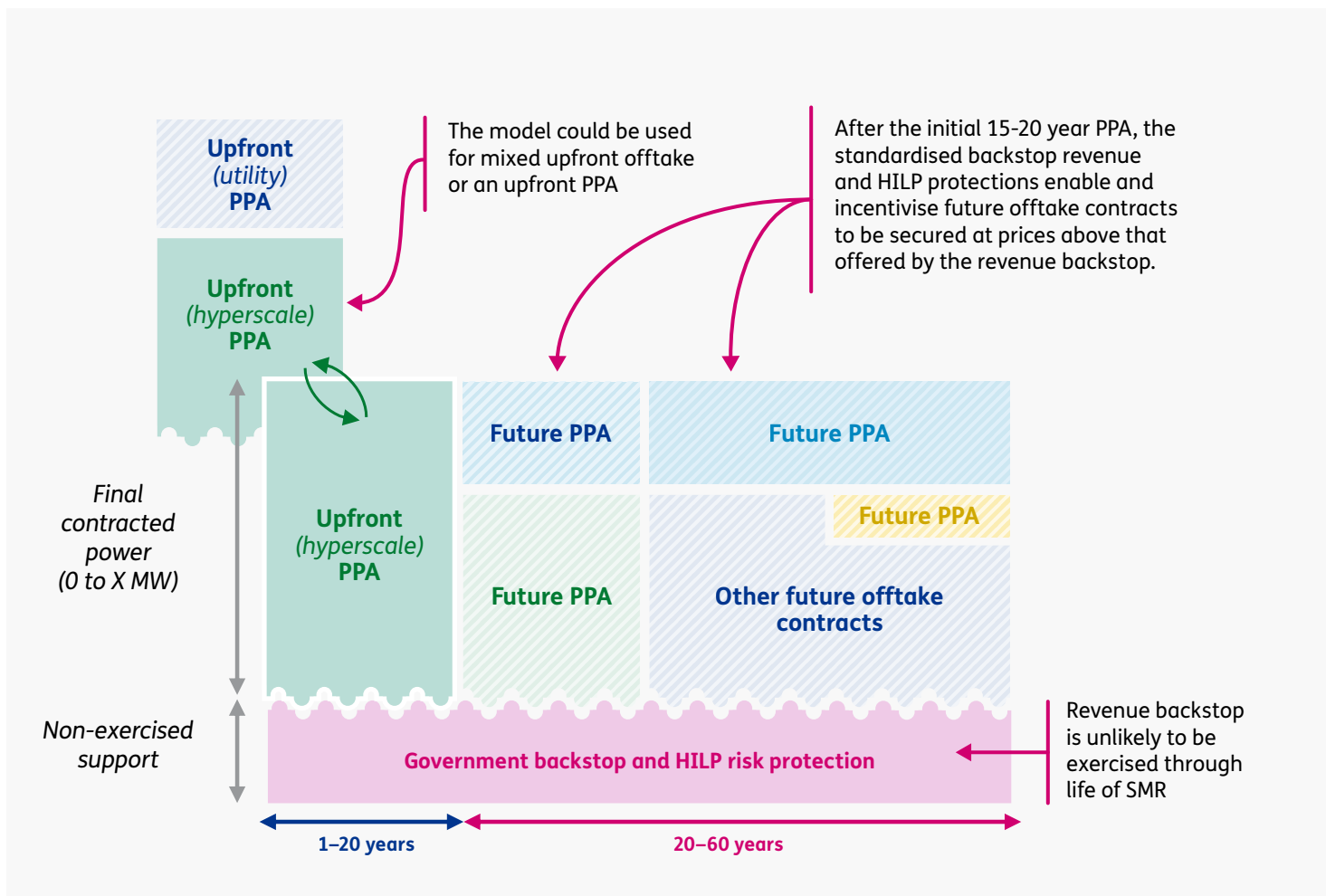


Figure 13: Backstop revenue and risk protections allow for a ‘plug and play’ approach to financing mechanisms; an upfront PPA-led model is most cost-competitive

Protection against HILP risks: Making Government support credible

HILP risks are protected under the Hinkley Point C and Sizewell C support models, and it is crucial that similar protection is offered for private demand-led SMR projects. As such, Government will have a distinct enabling role in developing **contractual protection against defined political, nuclear liability, and regulatory risks** over the asset’s lifetime. This is not about absorbing routine delivery or market risk, but about underwriting risks that are inherently sovereign in nature and uninsurable in private markets. To be effective, such protections should be:

- **Well defined and contractual** rather than discretionary, and deriving from regulations.
- **Focused on defined triggers** such as discriminatory changes in law, forced shutdowns, or material regulatory re-interpretations.
- **Standardised across eligible projects** to reduce uncertainty, cost, and negotiation burden.

A key lesson from renewable CfD contracts is that risk protections must be sufficiently broad to cover the full exposure scope and credible so investors can be confident they can access them. Investor feedback suggests that the change in renewable CfDs’ law protections is too narrow and insufficiently robust (i.e. subject to too many caveats), ultimately eroding confidence that risks will be protected if they materialise.

Example Government protections against HILP risks are explored in Section 6.2.

Accessing support: The importance of a standardised Government package

Crucial for the success of a private-led model is Government making available a standardised, openly allocated, contractual **Government Support Package (GSP)** early in the development period.

By standardising the GSP as much as possible, Government can enable the rapid creation of a visible project pipeline, which is essential to unlock fleet-scale SMR deployment, attract supply chain investment, and spread FOAK costs across multiple units. Alternatively, Government will need to enter negotiations on a project-by-project basis – raising administrative burden, slowing down pace of delivery, and exposing programmes to legal challenge all while increasing uncertainty. Indeed, if there is any risk that support could be withdrawn before projects reach FID, vendors, developers, and investors are unlikely to commit the £100s of millions of capital required for project development activities.

The GSP should therefore have the following features:

- **Standardised** to the extent possible (recognising that it won't be possible to standardise everything in advance, especially for FOAK projects), with pre-defined support mechanisms that provide certainty on Government expectations and financial implications.
- **Early conditional access** confirmed following a project's successful completion of defined readiness or assessment milestones.
- **Contractual certainty**, setting out the form of revenue backstop and HILP risk protection available at FID, subject to agreed timelines and conditions.
- **Protection against sovereign withdrawal risk**, including compensation for defined categories of sunk development expenditure if support is withdrawn for political or policy reasons before financial close (provided the project remains within agreed scope and timetable).

This approach ensures that Government support functions as a true enabler of private capital rather than a late stage concession. By reducing uncertainty during the development phase, it lowers the cost of capital, accelerates project maturation, and aligns public support with private led delivery rather than substituting for it.

The approach also gives Government meaningful influence to implement conditional criteria aligned with its priorities, such as wider system benefits, social value, UK supply chain participation, environmental protections, and delivery milestones.



5.4 All parties should collectively manage FOAK uncertainties

Residual FOAK uncertainties must be deliberately bounded, shared, and reduced over time if SMRs are to be delivered at a competitive cost without open ended Government underwriting

Modularised nuclear offers a genuine opportunity to change the risk profile of nuclear delivery. Standardised designs, repeatable manufacturing, and more predictable construction sequences can simplify engineering, improve schedule control, and reduce cost uncertainty. Over time, this creates delivery risk that can be priced and financed by the private sector without relying on large scale Government guarantees.

However, for early projects – where designs are being proven, supply chains are being established, and delivery learning is still taking place – uncertainties in FOAK costs, schedules, and delivery approach remain material. For these projects, neither developers nor investors can reasonably be expected to absorb completely unbounded cost and schedule risk, particularly where that risk sits outside any single party’s direct control.

Solving this challenge requires solutions for three risk types:

- **Known risks**, which can be quantified, bounded, and owned by the nuclear sector.
- **Residual risks**, which contain a degree of uncertainty and may require a form of risk pooling to be appropriately bounded and managed.
- **Unbounded project completion risk**, which is unfinanceable to the private sector and necessitates Government support.

The nuclear sector can agree project cost positions to manage known risks

Within delivery partnerships, consortium members – including technology vendors and EPCs – should be able to take responsibility for a defined proportion of the total project cost that reflects outcomes within their control. This can take the form of fixed price or banded cost commitments, supported by contractual mechanisms such as liquidated damages for delay or under performance.

Embedding this discipline requires clear accountability across consortium partners, with incentives explicitly linked to overall project outcomes on cost and schedule rather than narrow package level performance. Done well, this alignment limits aggregate construction risk, strengthens supply chain performance, and materially improves investor confidence in delivery.

Residual FOAK risks can be bounded against cost confidence intervals, but beyond these limits, project completion risk necessitates Government support

Even with strong private sector accountability, FOAK cost uncertainties will remain – particularly where learning effects, interface risk, or early supply chain immaturity are involved. The most significant of these residual uncertainties is project completion risk – **an unfinanceable barrier to private investment for early projects**.

Self-evidently, the onus is on the nuclear sector to provide accurate estimates, and Government rightly should not be responsible for a project's failure to predict costs. However, unpredictable events such as geopolitical or macroeconomic supply chain shocks could materially impact actual costs through no fault of the project. Project abandonment mid-construction may also require Government to step in to finance decommissioning – a potentially poor value-for-money decision compared with Government financing the remaining construction with an associated equity stake.

Government taking on an **'investor of last resort'** backstop role will be required, with similar precedents already set on Sizewell C and Thames Tideway. The expectation is that Government will only need to step in where cost overruns exceed the levels that the private market can reasonably absorb, and only on a capped and predefined basis. It is recommended that this threshold cap is set between the P90 and P95 cost confidence interval – i.e. intervention is only required if cost projections with less than a 5-10% chance of occurring have been exceeded.

This approach will ensure that residual risks – those between the nuclear sector's firm cost position and the threshold cap – **are explicitly bounded, quantified, and financeable to the private sector**. The private sector will then remain incentivised to minimise costs, both directly and because of the benefits that will accrue via fleet rollout if initial projects are perceived to be successful.

Rather than leaving a single party exposed to residual risks, the risks should be explicitly pooled and bounded across project stakeholders

Pooling residual FOAK risk across delivery partners and investors – including Government export – will enable early projects to proceed with a quantified and financeable risk profile. Crucially, this ensures that all residual exposures have a clear ceiling and a defined allocation to an appropriate stakeholder, improving investor confidence.

Figure 14 shows how risk pooling can be achieved in practice with contractual performance incentive structures based on an estimated FOAK cost – and how an 'investor of last resort' backstop only applies beyond the agreed P90-P95 confidence threshold. Figure 15 shows how specific risks could be allocated across key stakeholder groups.

Note that the risk pooling mechanisms described here are distinct from revenue support and are designed to limit, not expand, the circumstances in which Government support is called.

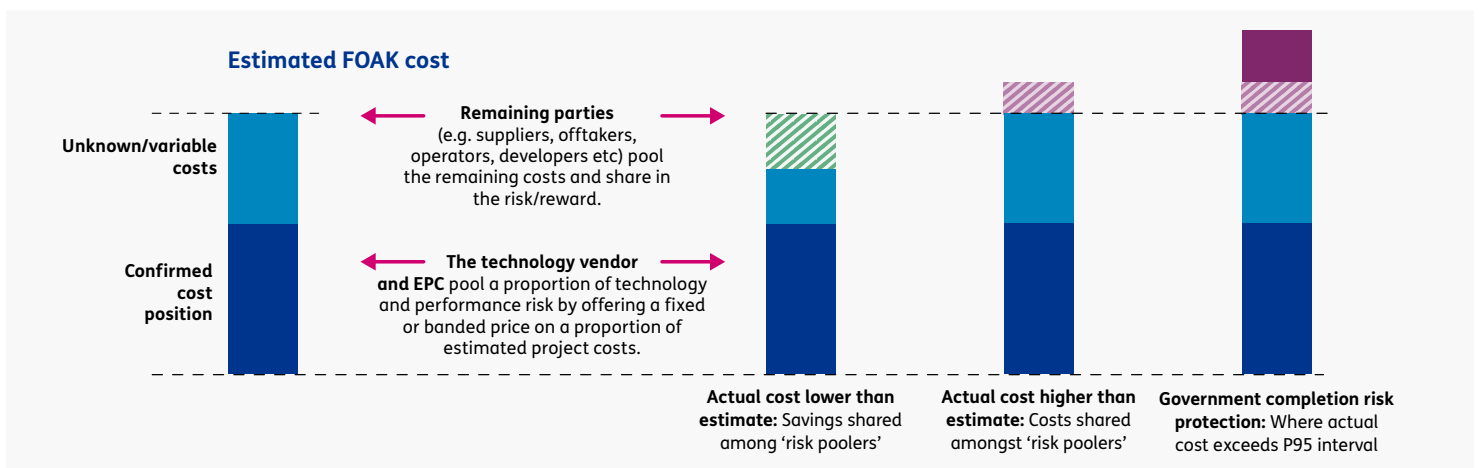


Figure 14: Illustration of how an agreed cost price and risk pooling mechanism can be implemented

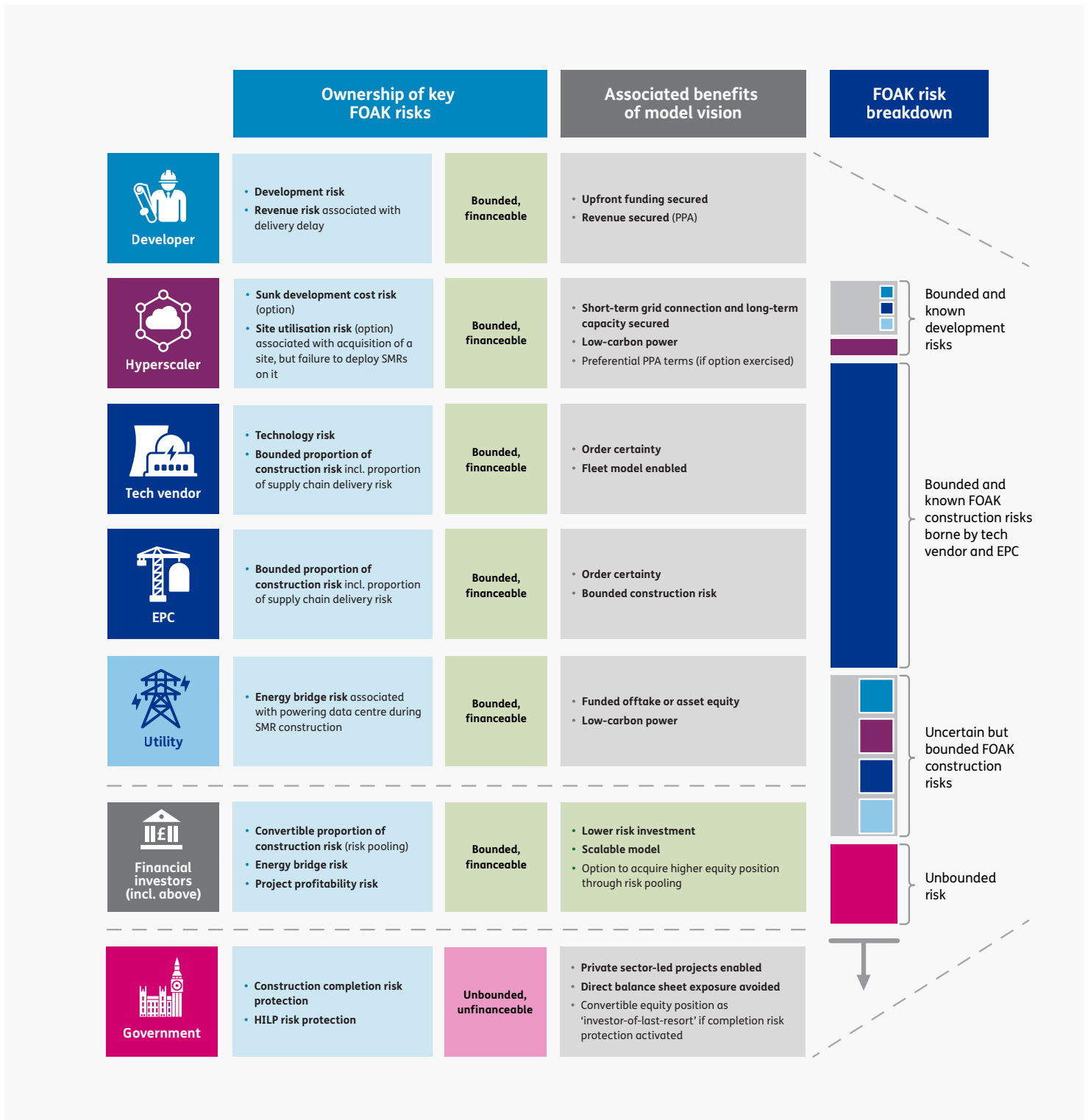


Figure 15: Allocation of FOAK risks and associated benefits to different stakeholders

Fleet level risk pooling: Protecting first movers and enabling cost reduction

FOAK risk is most effectively managed at the **fleet level** rather than on a project by project basis. Figure 16 shows that fleet level risk pooling allows early supply chain setup costs and FOAK premiums to be spread across multiple units, ensuring that first movers – including investors and offtakers – are not penalised with structurally higher costs.

A fleet deployment approach also creates a clear pathway for progressive cost reduction from FOAK to NOAK projects. Rather than allowing early projects to carry the full burden of initial learning, fleet level structures can deliver a more competitive **blended FOAK-NOAK cost outcome**, reducing the cost of power for first movers while preserving incentives to drive learning and efficiency.

For technology vendors, this reinforces the importance of securing **multi-unit order pipelines** across sites and projects. Visible pipelines justify investment in factories, enable standardisation, and increase the ability to capture production line and construction learning effects. As illustrated in Figure 16, this approach enables FOAK premiums to be pooled across initial units rather than loaded onto individual projects.

Multi unit site deployments further strengthen this effect. Shared systems and services – such as security, cooling water infrastructure, site works, and retained construction teams – make progressive cost reductions more achievable and improve delivery performance. Projects entering the Framework should reflect these opportunities explicitly in their siting strategies and business models. Energy park models with multiple offtakers (see Section 5.1) – initially a hyperscaler with subsequent industrials offtaking both heat and power – and a standardised GSP applied to each added SMR unit (see Section 5.3) can provide a dual approach to enabling risk pooling across units.

Taken together, the benefits of fleet scale deployment reinforce the importance of **convergence on a small number of credible SMR propositions**. Focusing delivery and supply chain investment on two or three proven designs maximises learning, accelerates cost reduction, and delivers better value for consumers and industrial offtakers. Framework implementation should reflect this ambition.

As FOAK projects are delivered and learning is captured, these pooled mechanisms should naturally fall away, allowing subsequent projects to be financed on increasingly conventional terms. In this way, collective, fleet level risk management accelerates the transition from FOAK delivery to repeatable, privately financeable deployment rather than entrenching permanent public support.

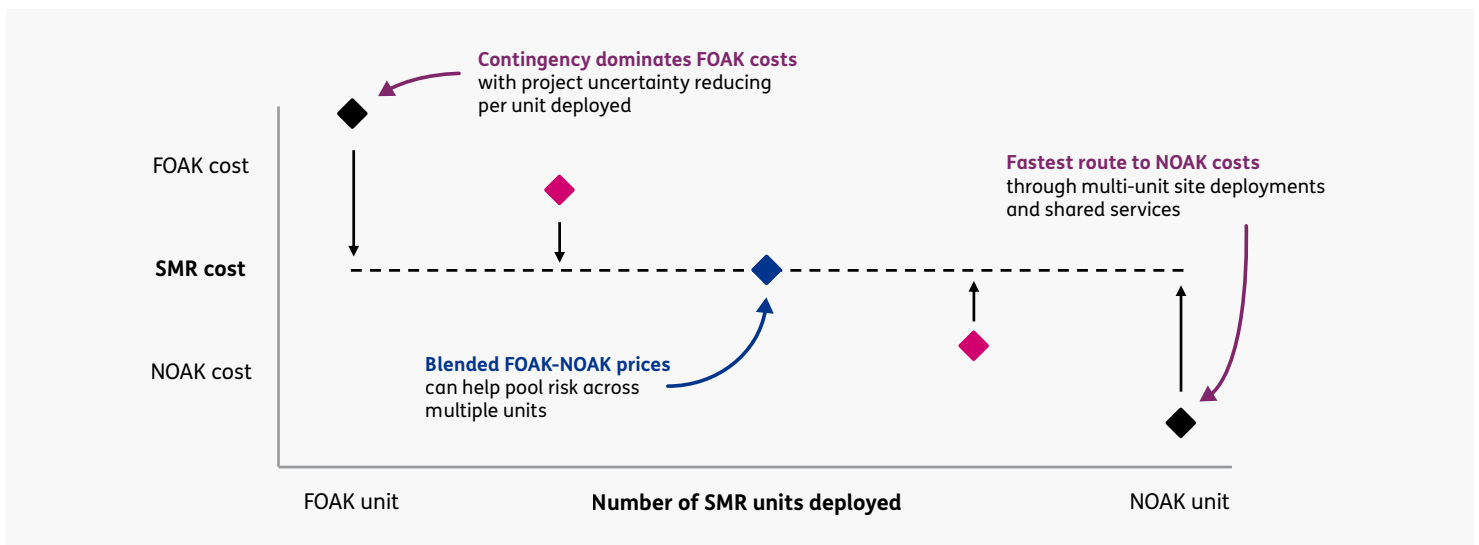


Figure 16: How a blended FOAK-NOAK price can spread risk over multiple units

Demand-led new nuclear:

A Government-last model through privately-funded advanced nuclear technologies

Foreword

1. Executive summary

2. Introduction and context

3. The AI and nuclear opportunity

4. Barriers to UK SMR deployment

5. Vision for demand-led SMR deployments

6. Implementing the vision

7. A year for action

References

6. Implementing the vision

Key takeaways

- **Delivery depends on early and sustained coordination** between the nuclear sector, hyperscalers, and Government rather than sequential hand offs.
- **Early clarity on a standardised GSP is essential** to unlock development finance and reduce cost of capital. The GSP should include details of the HILP risk protection and revenue support mechanisms which already have Government precedent.
- **Protection from political risk around GSP removal is required during development** – noting that this will be limited to sunk devex and will avoid full balance sheet exposure.
- **Government involvement should be proportionate to risk taken**, with lighter-touch processes for projects that depend on private sector PPAs for their viability and only require remote risk protection.

Government involvement in private-led projects should be proportionate to the level of risk it is prepared to take

The Framework has been designed in such a way that it can and should allow for Government involvement in projects to be proportionate to the level of risk it is expected to carry. This Section outlines how the Framework and vision can be aligned to deliver Government's stated goals without inhibiting private sector pace or risk appetite – and with a clear focus on using solutions that already have a Government precedent for implementation.

There are two key principles Government should seek to adopt in implementing the Framework:

- For projects requiring **direct revenue support**, a high level of Government involvement is reasonable. But where projects do not require direct revenue support – i.e. those that adopt the vision outlined in Section 5 – a lighter-touch approach can be adopted. See Figure 17.
- Government should aim to **develop as standardised a GSP as possible**, aligned to the model's vision. This should be defined as early into project development as is practical in order to de-risk private investment and accelerate SMR deployment projects.

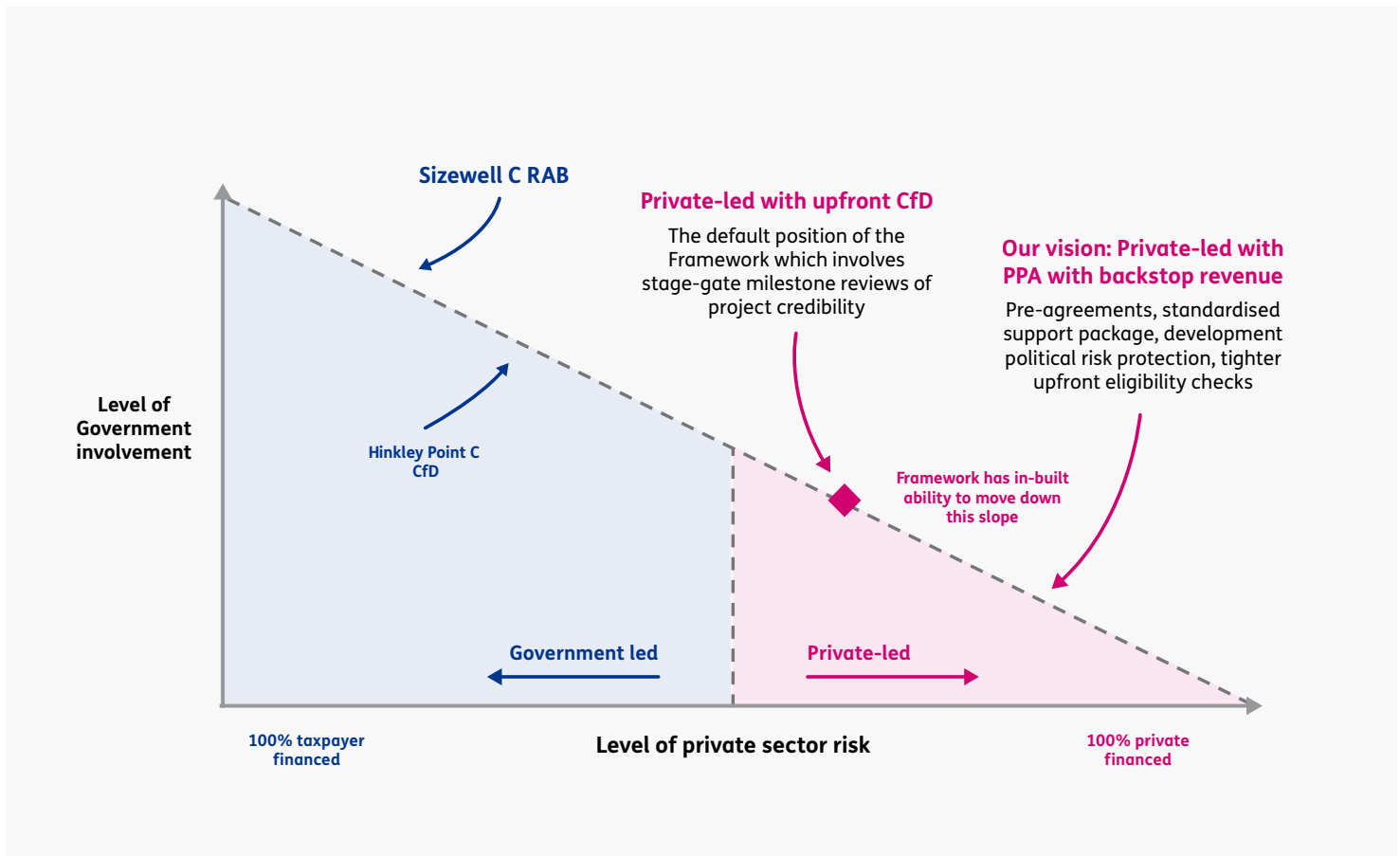


Figure 17: How the level of Government risk influences the required level of Government involvement

6.1 Building the model: Coordination and co-development

Early private-led SMR deployments depend on early, coordinated co-design between the nuclear sector, hyperscalers, and Government rather than a strictly linear hand-off between roles

The model described above should not be interpreted as a rigid sequence in which one party acts only after another has completed its role. In practice, delivery capability, demand commitment, and Government enablement are deeply co-dependent and must be developed in parallel.

The nuclear sector will not invest the time, capital, or capability required to form genuine delivery partnerships without meaningful engagement from hyperscalers and credible signals from Government. Equally, hyperscalers (and other potential offtakers) are unlikely to commit early unless they can engage with delivery partnerships capable of shaping bankable propositions – and unless there is clarity on the form of Government support that would apply to successful projects. Government, in turn, cannot design proportionate, standardised support mechanisms without credible projects and observable demand.

Therefore, the key is **early and sustained engagement between all three parties**, using the coming months to co-develop propositions, test assumptions, and progressively firm up commitments.

6.2 Clarifying Government support early

Confirming the revenue support mechanism for demand-led SMR projects as soon as possible will create investor clarity and collaboration opportunities

The vision for demand-led SMR projects described in Section 5 sets out how Government backstop revenue support can enable bankable long-term revenues without crowding out private PPAs. The vision directly builds on the Framework, providing detail on the nature of a support package that would help achieve both private and public sector objectives at minimal cost to taxpayers. Early clarity on how Government will implement such support mechanisms within a standardised GSP is critical for developers to secure finance at rates that reduce overall costs.

The vision therefore provides a potential benchmark for what this support should look like. And the backstop revenue support mechanism should deliver against the following principles:

- **Set pricing at financial close:** This will be necessary for investors to bank long-term revenues at the critical point of project financing, enabling the private PPA-led model.
- **Ensure it delivers value for money:** Pricing can be linked to independent central power price projections at financial close. This caps Government and consumer liabilities, meaning support payments are only incurred if power prices fall below forecasts – a scenario that is already beneficial for consumers and Government.
- **Remove bidding dynamics:** Linking pricing to a power price projection has the additional benefit of removing bidding or bilateral negotiation around terms, simplifying the agreement and reducing Government risk of legal challenge.
- **Allow for private sector enterprise:** Any contract should encourage the nuclear developer to sign additional private PPAs in the long term, which will prevent the backstop needing to be used. This reduces taxpayer risk exposure and could allow for the state to share in upside value if a gainshare is included.

This could be achieved with many revenue backstop design options. Two exemplars include:

- **'Always active' one-way CfD:** The mechanism would be active from 15 or 20 years onwards. It creates a floor for bankable revenues based on wholesale price projections at financial close, and allows the project to realise the upside from high wholesale power market prices or private PPA contracts.
- **Two-way CfD with yearly opt-out:** The mechanism would only be active when determined by the project. It creates stable revenues in those years while ensuring Government value for money through revenue payback in scenarios where prices are above central projections. The opt-out allows the project to pursue a private PPA contract for greater value as it sees fit.

In either option, Government could also implement a **gainshare** based on price or profit above an agreed threshold, to share in project upside.

Confirming details for HILP risk protection as soon as possible also creates market clarity to begin pricing risk exposure

Building on the vision in Section 5, Government should explore how HILP protection can be standardised as part of the GSP, rather than on a case-by-case basis that varies by project and

developer risk appetite. The standardised offering should be articulated as soon as possible, providing clarity on which risks are protected (or not) and avoiding the use of overly tight risk definitions. This can reduce complexity for all parties, enabling quicker and more replicable private routes to market.

Example risk protections within a standardised GSP are indicated in Figure 18. After initial projects, there is potential opportunity to realign and reduce Government coverage of these provisions as the private insurance market builds confidence to develop products for SMR projects.

HILP risk	Example protection provided
Political shut-down risk (during development)	Underwriting of a proportion of development costs if contractualised Government support was removed ahead of financial close.
Political shut-down risk (during operation)	Compensation equivalent to unamortised capital cost plus any breakage costs for PPAs or other contractual agreements.
Regulatory risk	Full compensation for 'specific' changes in law targeting the specific asset or nuclear sector in particular, or partial compensation for 'general' changes in law or regulation that lead to costs exceeding, for example, 10% of initial capex.
Operational risk	Underwriting of liabilities above the €1.2 billion Nuclear Installations Order 2016 threshold or a Government 'investor of last resort' role in the event of operator insolvency to ensure continued operation of the plant.
Construction completion risk	Painshare coverage of debt payments for costs above the specified P90-P95 confidence interval threshold for exogenous or macroeconomic impacts.

Figure 18: Example risk protections for different HILP risks

6.3 Implementing an initial development agreement

Raising development finance requires certainty around Government's support offering and protection against sovereign risk through to financial close

The next steps for the Framework involve: (a) providing clarity on the timelines for negotiating and implementing a GSP after a project successfully completes the PRA, and (b) providing greater definition of support mechanism detail. Without these, the GSP may not be signed until financial close – creating a two-to-four-year uncertainty window during which a potential GSP deal could be withdrawn owing to sovereign risks/political choices.

Given the magnitude of development expenditure (£100s of millions), unless investors have clarity and sufficient certainty on either of these aspects, the development finance risk challenge will remain, regardless of any National Wealth Fund support offered to projects.

Government can introduce initial project agreements to bolster investor confidence while minimising state risk

Figure 19 describes how early clarity and access to a GSP post-PRA exit could be provided in practice, and how the PRA's assessment architecture can be leveraged to effectively balance Government's risk appetite with the private sector's desire for pace (while ensuring value for money for taxpayers).

Post-PRA: A pre-GSP contract between Government and projects

Government should sign a pre-agreement contract with qualifying projects for access to the standardised GSP. It should align this pre-agreement with PRA completion to reduce uncertainty in the GSP, outlining the core provisions of the standardised contract that will eventually be signed prior to financial close. Key principles will need to be defined and agreed early in the PRA process, although final contractual arrangements can be developed through to FID.

Government should underwrite political risk in the development phase, compensating endorsed projects if the final GSP were to be withdrawn ahead of financial close due to policy change rather than project fault. Any underwrite should be proportionate to the risk and development spend at the point it is triggered.

Without pre-GSP protection, it is plausible that Government or the National Wealth Fund would have to directly fund a proportion of development costs through FEED grants, as is the case with the Rolls-Royce SMR project at Wylfa and across other sectors (e.g. CCUS).

PRA assessment: Eligibility criteria for a fast-tracked AI and nuclear pathway

Government could fast-track access to pre-GSP agreements for AI and nuclear projects that only require limited and targeted support. The importance of this fast route to market approach is that it:

- Is critical in capitalising on the time-bound nature of the AI and nuclear opportunity.
- Reflects how the private sector will bear the vast majority of risk in these projects, with no direct Government balance sheet exposure.
- Can prompt faster convergence on two to three credible propositions, enabling and accelerating fleet-scale deployment opportunities and unit cost reductions.

Clearly prescribed and high-hurdle criteria (see Section 5.1), aligned to the PRA's existing scoring matrix, would give Government confidence in project credibility and streamline assessments for credible AI and nuclear SMR projects eligible for a pre-GSP agreement. These criteria should be aligned to:

- **Technology and supply chain**
 - Reactor technology with a route to competitive power prices.
 - Realistic supply chains with established suppliers.
- **Developer capability**
 - Capable developers with experience holding site licences.

• **Siting plan, operation, and end users**

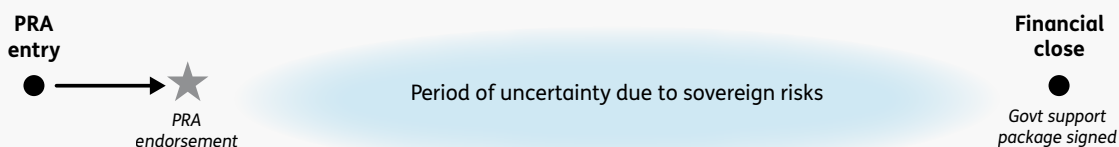
- End-to-end partnerships that include site owners, EPCs, operators, utilities, and hyperscalers.

• **Finance, funding, and investment**

- Evidence of a private offtaker involved in the project (see bullet above).
- Governance and execution capability, with clear risk allocation agreements.
- Bounded uncertainties, in which EPCs and tech vendors offer capped project costs (fixed or banded) and defined risk threshold limits are defined where possible.

For projects requesting a greater degree of Government support – including upfront revenue – a more involved Government approach is beneficial. The existing PRA process is well-equipped to manage these projects. The proposed stage gates and periodic review processes implemented during the development phase provide Government with sufficient off-ramps. These projects are unlikely to be those aligned with the AI and nuclear models outlined in Section 5, as they are unlikely to be financed on the basis of upfront PPAs.

Framework as designed: February 2026



Recommended approach to Framework implementation

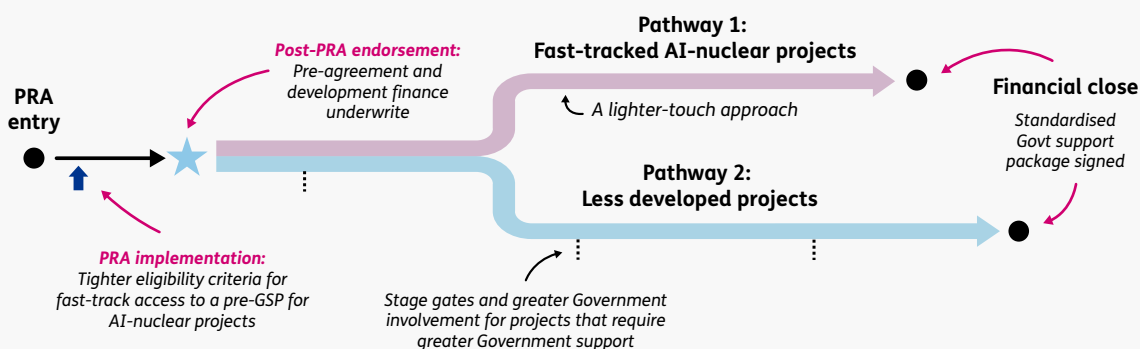


Figure 19: Pre-agreements and development finance underwriting can remove uncertainty between PRA and financial close; tighter upfront eligibility can fast-track credible projects



6.4 Government can take a ‘hands-off’ approach after upfront enabling activity

Minimising its involvement is the most beneficial support Government can offer to private-led projects between signing a pre-GSP and FID

The vision proposed in this report would significantly reduce the level of involvement and risk for Government in PPA-led private projects, with projects able to rely on a standardised GSP and develop more independently (in a similar way to renewables projects).

From pre-GSP signing through to FID, the **onus is on the private sector to bear the majority of risk** and bring forward ‘shovel-ready’ propositions by FID. Projects may fail in this intervening period, driven by market forces. Projects that do make it to FID will have strong construction partnerships, offtake models, and investor backing. Crucially, they will also be eligible for the GSP, as project credibility has already been endorsed through the PRA.

This intervening development gap between pre-GSP and FID requires minimal Government involvement. The only obligation is protection against political risk. Indeed, the early and intensive upfront work the Government should undertake within the next 12 months (alongside the nuclear sector and industry) to implement the recommendations of Sections 5 and 6 – particularly around the design of the pre-GSP – **will help create a more traditional market ecosystem**, mirroring other energy technologies.

Similarly, **the only requirement of Government at FID is that the GSP does not diverge from what was offered when the pre-GSP agreement was signed** – and that the standardised GSP’s contracting details are ‘oven ready’ on time.

Evidently, continued dialogue with Government will be necessary to understand when projects expect to be ready for FID; **but, in essence, less is more.**

This lighter-touch approach also does not prohibit Government from continuing to advance the enablers outlined in Part 2 of the Framework across supply chain, skills, and international partnerships. Rather, it can enable more concerted efforts to progress them at pace, supporting Government to capture supply chain export opportunities and growth at pace.

6.5 Solutions with precedent

The model vision and practical implementation steps outlined in this Section have been designed with the intent to **simplify and ease Government involvement** in enabling private-led SMR deployments. As shown in Figure 20, all but one of the **solutions recommended have precedent in prior energy sector interventions**, and thus can be translated across to a demand-led AI and nuclear growth SMR deployment model.





Proposed solution:	Government precedent?	Example and comment
Backstop revenue		Example(s): CfD scheme, RAB model, Offtaker of Last Resort Comment: CfDs guarantee a fixed strike price for power; RAB ensures regulated, government-approved revenue streams during construction; Offtaker of Last Resort guarantees eligible renewable generators a PPA at a discount price.
HILP and completion risk protections		Example(s): Sizewell C, Thames Tideway Tunnel, Hinkley Point C (HILP risks only) Comment: Sizewell C has explicit protections against HILP risks (political and regulatory), and protection against completion risk. Thames Tideway Tunnel has both forms of protection with Government taking on an Insurer of Last Resort role.
Standardised Government Support Package (GSP)		Example(s): Renewables Obligation Certificates, Renewables CfDs Comment: Both examples have involved unified accreditation or compliance rules – not dissimilar from the Framework’s Project Readiness Assessment criteria – that enables access to standardised support.
A pre-GSP agreement, with political risk underwritten in project development phase	 Partial	Closest example(s): Thames Tideway Tunnel, GBE-N FEED funding for Rolls-Royce SMR Comment: Although framed as construction risk protection, the Insurer of Last Resort provision on the Thames Tideway Tunnel provided functional protection against the risk of government failure to maintain its part of the regulatory / contractual deal during development. The Rolls-Royce SMR FEED funding through GBE-N is an alternative example – the FEED grant announced in April 2026 underwrites political risk during the pre-FID development period.
Risk pooling	 Independent of government	Example(s): Australian Alliance Model (AAM) – e.g., Victorian Desalination Project Comment: Increasingly explored for major and FOAK infrastructure projects, the AAM adopts the principles of collective risk ownership, painshare and gainshare, and best for project decision making. A Government cost cap / funding envelope can be applied.

Figure 20: Evidence of Government precedent for implementing the model

Demand-led new nuclear:

A Government-last model through privately-funded advanced nuclear technologies

Foreword

1. Executive summary

2. Introduction and context

3. The AI and nuclear opportunity

4. Barriers to UK SMR deployment

5. Vision for demand-led SMR deployments

6. Implementing the vision

7. A year for action

References

7. A year for action

Key takeaways

- **Actions taken in the next 12 months will determine whether the first SMRs are delivered in the mid 2030s** or whether the UK forfeits early mover advantage and loses AI leadership opportunities.
- **Nuclear developers, hyperscalers, and Government each have near term actions that must proceed in parallel** to maintain momentum.
- **The opportunity remains open:** Coordinated action can secure AI driven growth while anchoring a scalable, private led SMR fleet in the UK.

Coordinated actions across the nuclear sector, Government, and hyperscalers within the next 12 months can secure UK leadership in AI and nuclear growth

Timing is critical if the UK is to capitalise on its leading position in the SMR market and AI revolution. The UK risks missing out on supercharging both industries if it delays action, as mid-2030s deployment timelines for SMRs will be difficult to achieve, and European peers are actively developing their own support frameworks to attract the same capital and companies. The risk is damaged confidence in the nuclear sector and increased chance that both investors and AI hyperscalers look elsewhere for these opportunities.

Material progress must be made across each of the components outlined in the vision (Section 5) and proposed approach to implementing it (Section 6) to avoid delays. In Figure 21, we have identified the high-level roadmap for key activities in the next year.

The nuclear sector should convene delivery models and credible propositions to provide an attractive proposition for private PPA offtakers and Government's collaboration role.

Offtakers should engage the market and outline their requirements – to Government for data centre power access and to the nuclear sector for defining acceptable commercial solutions and collaborating on projects' development phase.

Government should develop the AI and nuclear growth model and publish its vision, engaging early with industry stakeholders to define the contents of a standardised GSP. This should take the benefits of existing precedents for the model's proposed solutions, with intent to outline pre-GSP agreements upon PRA completion.

Actions in the next 12 months and beyond

c. 2029

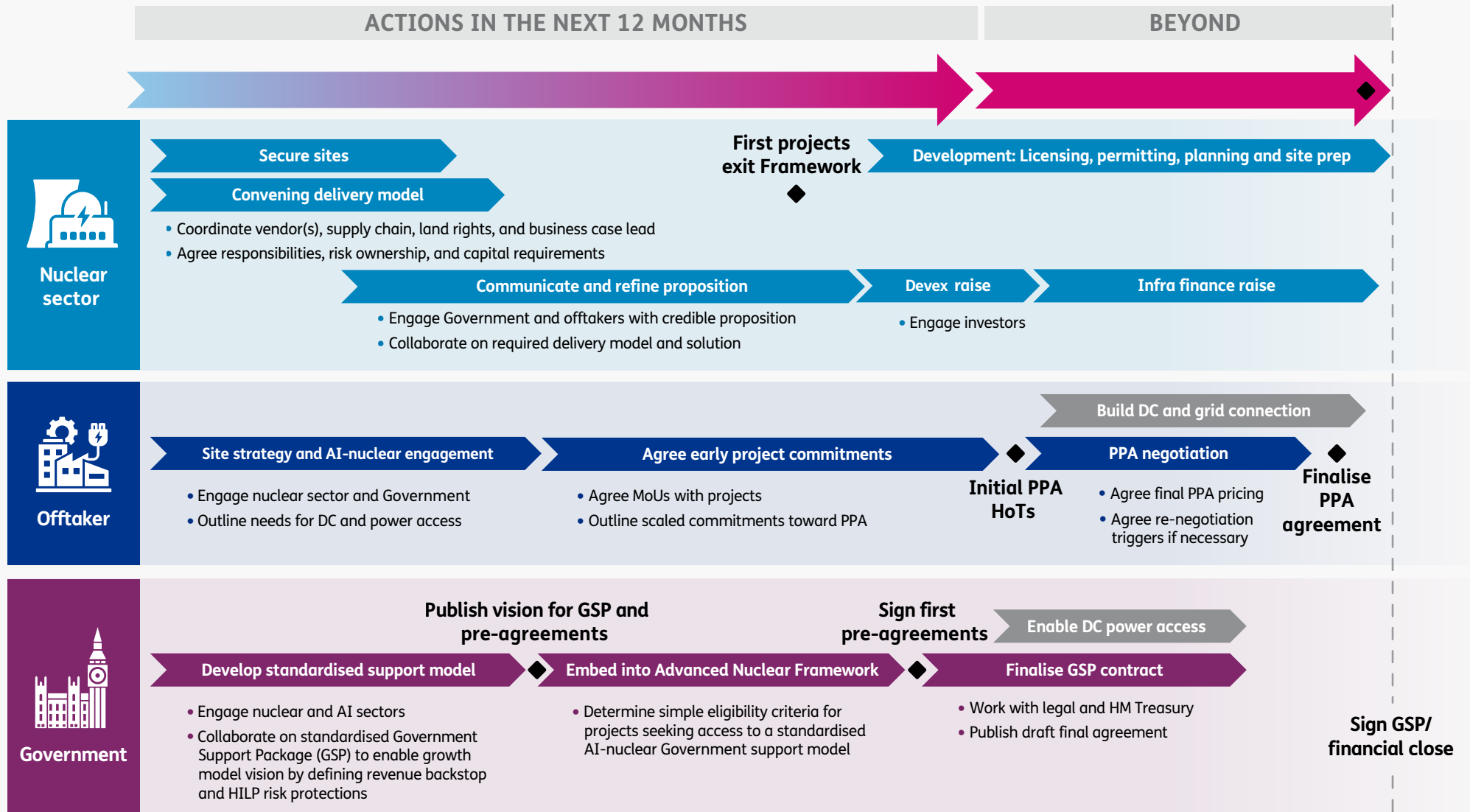


Figure 21: Illustrative milestones to be delivered in the next 12 months and beyond to enable the AI and nuclear growth opportunity

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5. Vision for demand-led SMR deployments

6. Implementing the vision

7. A year for action

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